

INTERNATIONAL RESEARCH AND REVIEWS IN  
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SCIENCES

**EDITORS**

**PROF. DR. ŐEHRİBAN KOCA**  
**PROF. DR. BÜLENT PEKDAĖ**

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# CONTENTS

## *Chapter 1*

### **HISTORICAL UNDERPINNINGS OF ENGLISH LANGUAGE TEACHING IN TÜRKİYE: A COMPREHENSIVE REVIEW**

*Doğan Can AKÇİN* ..... 1

## *Chapter 2*

### **DRAMA PEDAGOGY IN GERMAN AS A FOREIGN LANGUAGE LESSONS**

*Özlem TEKİN* ..... 19

## *Chapter 3*

### **UNDERSTANDING SPEAKING SKILLS IN ENGLISH FROM THE PERSPECTIVE OF SELF-REGULATED MOTIVATION**

*Güray Karaduman, Pınar KOÇER, Semahat AYSU* ..... 41

## *Chapter 4*

### **EDUCATIONAL APPROACHES OF PRESCHOOL TEACHERS: INVESTIGATION OF EDUCATIONAL ACTIVITIES WITHIN THE FRAMEWORK OF CHILD-CENTERED APPROACH**

*Duygu Saniye Öztürk* ..... 53

## *Chapter 5*

### **THE MEDIATING IMPACT OF PARENTAL SELF-EFFICACY AND PARENTAL INTEREST ON THE RELATIONSHIP BETWEEN SOCIOECONOMIC STATUS AND STUDENTS' ACADEMIC PERFORMANCE**

*Turhan ŞENGÖNÜL* ..... 81

## *Chapter 6*

### **COMPARATIVE ANALYSIS OF THE PERCEPTION OF THE VECTOR CONCEPT BY PHYSICS AND MATHEMATICS TEACHER CANDIDATES**

*Şükran ERDOĞAN, Ersin BOZKURT, Ahmet ERDOĞAN* ..... 103

*Chapter 7*

**METHODOLOGICAL ACTION AS PART OF PROFESSIONAL  
IDENTITY IN SOCIAL WORK AND ITS EVALUATION WITH  
HABERMAS**

*Ali Demir* ..... 115

*Chapter 8*

**WORKPLACE FAVORITISM: ANALYSIS OF CAUSES,  
CONSEQUENCES, AND MITIGATION STRATEGIES**

*Bünyamin HAN* ..... 139

*Chapter 9*

**TEXTVERSTEHEN IM FREMDSPRACHENUNTERRICHT**

*Nihan DEMİRİYAY* ..... 159

*Chapter 10*

**EXPLORING TECHNOLOGY INTEGRATED PERSONALIZED  
LEARNING APPROACHES IN SCIENCE EDUCATION: AN  
EXAMINATION OF EMERGING TRENDS AND EFFICACIES**

*Özkan YILMAZ* ..... 173

*Chapter 11*

**THE IMPORTANCE OF OPEN SPACE DESIGNS IN RECREATION  
EDUCATION**

*Buket ÖZDEMİR IŞIK, Sabiha KAYA* ..... 189

*Chapter 12*

**TEACHING FUTUR TENSE IN MULTIPLE INTELLIGENCE THEORY  
(MIT) IN FRENCH AS A FOREIGN LANGUAGE (FFL) CLASS**

*Senem Seda ŞAHENK* ..... 207

*Chapter 13*

**THE IMPACT OF SOCIOECONOMIC STATUS AND SOCIAL CLASS  
ON SOCIALIZATION, EDUCATION AND COGNITIVE SKILLS IN  
EARLY CHILDHOOD**

*Turhan ŞENGÖNÜL* ..... 219

*Chapter 14*

**TURNITIN, PLAGIARISM, AI SIMILARITY INDEX AND  
AI-GENERATED CONTENT: A DISCUSSION**

*Ulaş Başar Gezgin* ..... 249

*Chapter 15*

**INVESTIGATION OF THE RELATIONSHIP BETWEEN SCHOOL  
PRINCIPALS' ORGANIZATIONAL HAPPINESS LEVELS AND  
LIFELONG LEARNING TENDENCIES: HIERARCHICAL LINEAR  
MODELING (HLM) ANALYSIS**

*Seyfettin ABDURREZZAK, Ümit DOĞAN* ..... 261

*Chapter 16*

**NEUROLOGICAL CORRELATES OF EDUCATIONAL ACHIEVEMENT:  
EVALUATING THE EFFICACY OF FMRI AND EEG IN LEARNING  
ASSESSMENTS**

*Zümriit Varol Selçuk, Gamze MERCAN, Pınar KÖSEOĞLU*..... 275

*Chapter 17*

**EXPLORING GENERALIZABILITY THEORY IN R: UNDERSTANDING  
ONE-FACET AND TWO-FACET FULLY CROSSED DESIGNS WITH  
PRACTICAL EXAMPLES**

*Bilal Barış ALKAN, Şevki Yetkin ODABAŞI* ..... 287

*Chapter 18*

**THE RELATIONSHIP BETWEEN READINESS FOR CHANGE AND  
PROFESSIONAL SELF-EFFICACY BELIEFS IN THE TEACHING  
PROFESSION**

*Seher Demirhan, Duygu Saniye Öztürk* ..... 315

*Chapter 19*

**INTEGRATION OF DIGITAL TECHNOLOGIES IN MATHEMATICS  
EDUCATION: PEDAGOGICAL PERSPECTIVES AND INNOVATIVE  
PRACTICES**

*Gamze Mercan*..... 345







# Chapter 1

## **HISTORICAL UNDERPINNINGS OF ENGLISH LANGUAGE TEACHING IN TÜRKIYE: A COMPREHENSIVE REVIEW**

*Dođan Can AKÇİN<sup>1</sup>*

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## Introduction

ELT holds significance in Türkiye for a multitude of historical, political, and economic reasons. Foremost among these is the aspiration to align more closely with Western nations. Although predominantly Muslim, Türkiye has pursued membership in the European Union (EU). Beyond meeting the EU's vast array of social, economic, and political criteria, Türkiye has continuously striven to validate its "European identity." Ever since the establishment of the Republic in 1923, the wide-ranging reforms spanning law, politics, economics, and education have been pivotal in establishing this identity. Among these, the influence of educational and linguistic reforms on Türkiye's nation-building stands out and has garnered considerable attention from researchers. As Bear (1985) claims educational phenomena need to be contextualized for an effective understanding and enhancement of current practices. Thus, investigations into Türkiye's linguistic and educational reforms offer crucial insights into various challenges tied to educational policy-making. One notable outcome of these reforms has been the emergence of English as the dominant foreign language. This development is particularly intriguing because, as Bear (1985) notes, in Türkiye, English is not an official language, a lingua franca or a second language. It is not a remnant of colonization or the legacy of missionaries, and though it is taught in the schools, it has never been institutionalized to function as the primary language of higher education.

The importance of EFL in Turkish education is undeniable. Bear (1985) highlights that scholars have, to a large extent, overlooked the influence of socio-cultural and historical elements in foreign language pedagogy. He further suggests that by understanding specific historical, cultural, and societal nuances, we can gain insights into both the achievements and pitfalls of foreign language teaching in Türkiye, leading enhancements in existing practices. Understanding the history of ELT is crucial not only for refining contemporary practices but also for gaining alternative viewpoints on present-day challenges. As Bartu (2003) states, the ongoing debate is the distinction between the concepts of teaching foreign languages and delivering education in a foreign language. Bartu delineates this contention by distinguishing between "protectionists", who oppose English-based instruction, and the "internationalists", who believe in full immersion for more effective language learning. König (1990) highlights that the prevailing sentiment towards English is primarily economic. She articulates that even a foundational proficiency in English is pivotal for social and professional advancement. This proficiency not only offers expanded career options but also elevates one's social status. Hence, enrolment in an English-medium institution becomes added prestige upon the individual".

Offering a historical perspective can shed fresh light on these discussions. As Monaghan and Hartman (2002) claim, history supplies an additional dimension of context to comprehend events. Such a nuanced understanding is particularly pivotal in Türkiye's ELT domain, given that, despite its evolution as a field of inquiry, certain challenges persist unresolved. Thus, turning to history is integral to framing and contextualizing the ELT methodologies of the present. To understand the history of English language instruction in Türkiye, it's imperative to delve into the times of the Ottoman Empire. Modern Turkish Republic's pedagogical practices are rooted in Ottoman traditions, marking the onset of teaching English as a foreign language during this regime. Hence, my initial discussion will concentrate on the educational framework of Ottoman Türkiye, with a special emphasis on the instruction of foreign languages.

### **English Language Teaching in the Ottoman Empire**

This section delves into how English is taught in both state-funded and minority-focused schools. I have drawn this distinction by examining the concept of liberalism and how states prioritize the rights of groups with linguistic minorities (Ricento, 2012). A link emerges between the inception of minority-centric schools and the ideals of traditional political liberalism, especially when looking at the preservation of native languages. The benefits extended to such minorities closely follow the principles found in liberal political ideologies. According to Kymlicka et al. (2003), it's vital for a state, as the guardian of individual rights, to refrain from favouring any particular language. This stance is due to the unfair leverage granted to individuals who naturally speak a dominant language.

Central to the aims and extent of this paper, the Tanzimat Period stands out as a key moment in acknowledging minority needs, particularly in the field of specialized educational institutions and native language instruction. As described by Shaw & Shaw (1977), "The Tanzimat-i Hayriye, or "Auspicious Reordering," marks a pivotal era characterized by extensive legislative actions and reforms. These reforms not only modernized the Ottoman realm and its societal structures but also accentuated the centralization of governance. In chapters that follow, I will dissect English instruction through the lens of Carnoy's (1999) educational reform theories. He hypothesizes three global-driven models: those shaped by competition (enhancing education to match job market shifts), financial goals (curbing educational funding to lure overseas enterprises), and equity (making top-tier education accessible to every demographic).

During the Tanzimat Period, the Empire witnessed a pivotal shift in English education. This era brought sweeping changes in various sectors, with education at the forefront. Consequently, there was a surge in the number of institutions teaching English. Additionally, the period witnessed equality among Muslim and non-Muslim residents, prompting the rapid rise of mission educational centers during the 19th and early 20th centuries. Interestingly, a significant portion of these centers was backed by French religious entities.

Davison (1961, p.290) emphasized that “Turks were affected by Western educational influences which came through six channels”. Grasping these avenues is vital in understanding English’s prevalence in the Ottoman society. The initial channel pertains to self-driven education; numerous globally acclaimed Turks, spanning diverse domains like arts and politics, were predominantly self-educated. This approach, though seemingly undermining the traditional educational structure, is contrasted by the other five avenues that emphasize formal education.

It’s crucial to underscore that the English educational wave primarily stemmed from schools funded by Western and minority patrons. To counteract rising nationalist sentiments, the Empire permitted these entities to establish schools. Such educational reforms align with the reform model presented by Carnoy (1999). Echoing this sentiment, Dolgunsoz (2014) posited that a paramount concession given by the multi-ethnic Ottoman Empire to its minorities was the privilege to establish their own national schools. Western educational ideologies affected the entire Empire, but regions like Egypt and the Balkans felt a deeper impact (Davison, 1961). This study delves into the English-centric minority institutions in these specific regions. The choice of these locales for school establishments likely reflects the dominant Christian or non-Muslim Turkish populace. In this regard, Davison (1961) suggested that regions densely populated by Christian minorities became focal points for Christian missionaries, given the resistance they faced from other religious groups opposed to Western educational concepts.

These regions’ linguistic diversity necessitated the prominence of a foreign language over indigenous ones for effective communication. Yet, the surge in minority and mission schools didn’t lead to the integration of English into the curriculum. Simply put, these schools did not integrate English into their academic agendas. Instead, there was a clear tilt towards the Greek and French languages, complemented by the native tongues of the minority populations. However, Greek schools stood out due to the incorporation of English in their curriculum but tailored for particular goals.

Schools set up by American missionaries hold a pivotal place in the trajectory of English language teaching within the Empire. Erhan (2000) and Kocabaşoglu (2000) highlight that the origins of Turkish-American relations

can be dated to the late 18th century, marked by the advent of American traders in North Africa. Following this, the early 19th century saw a proliferation of American educational institutions across the Empire. Understanding the historical trajectory of these American establishments in the Ottoman Empire is vital to situating the development of English language instruction in the aftermath of the Turkish Republic's formation. Furthermore, it aids in appreciating the influence that these schools had on English language teaching methodologies and approaches.

It's plausible to suggest that the endeavors to inaugurate mission schools resonated with the vision of the American Board of Commissioners for Foreign Missions (ABCFM or simply, the Board). As referenced by Schnedier, (1846, cited in Erhan 2000), the Board, fueled by the ambition to spread their religious beliefs globally, dispatched two American missionaries to undertake groundwork in the Ottoman Empire. Erhan (2000) posits that initiated modestly in the late 1820s, missionary endeavors metamorphosed into a comprehensive and expansive operation by the 1840s, peaking in the latter part of the 19th century. At the heart of these missionary operations was education, prompting the founding of a many schools by American missionaries. A case in point is the Robert College, a private institution founded in Istanbul in 1863 by Americans. Table 1 offers insights into the number of American missionaries stationed in Istanbul and the number of schools inaugurated throughout the Empire between 1818 and 1913. The data suggests a gradual increase in American influence, both in the educational field and in the broader society, primarily through institutions managed by American missionaries. Until the Tanzimat period, the government lacked a defined policy concerning these American institutions. The rapid expansion of American establishments within the Empire inevitably drew the attention of Ottoman administrators. Yet, the government struggled to implement an effective policy regarding foreign schools.

**Table 1**

*Number of American Missionaries Appointed to the Posts in Levant and Schools Opened by American Missionaries (Taken from Erhan, 2000)*

| Number of American missionaries in Istanbul | Number of schools   |
|---|---------------------|
| 2 missionaries in 1818                      | -                   |
| 41 missionaries in 1836                     | -                   |
| 97 missionaries between 1836-1844           | 7 schools in 1850   |
| 137 missionaries in 1875                    | 114 schools in 1860 |
| 177 missionaries in 1890                    | 331 schools in 1880 |
| 209 missionaries in 1913                    | 450 schools in 1913 |

Tasdemirci (2001) also points out that by the mid-19th century, the Ottoman Empire housed close to 400 American schools and about 100 French schools. While the combined count of American and British institutions did surpass that of the French, the student enrolment in French Catholic schools exceeded that of their American and British counterparts. The explanation for this discrepancy possibly lies in the prevailing popularity of French as the diplomatic *lingua franca* of Europe during that era. Highlighting the superiority of French, an eighteenth-century treaty between the Ottoman Empire and Great Britain was crafted in French, stemming from the lack of a proficient English translator (Bear, 1985). Dogançay-Aktuna (1998) points out the curious fact that despite establishing trade relations as early as the sixteenth century, neither the Ottomans nor the British took significant steps to learn each other's languages to bolster trade volumes.

Despite the rise of foreign schools in the nineteenth century, a notably small number of Turkish students attended the institutions (Davison, 1961). Initially, these American schools were attended by Armenian, Bulgarian, Greek, and Jewish students. However, as proficiency in English became synonymous with better job prospects, Turks began enrolling in these institutions (Allen, 1968). As an illustrative case, Washburn (1909, as cited in Davison 1961) mentions that in 1869, only two of the seventy-one students at an American school were Turkish. Furthermore, Robert College didn't graduate its first Turkish Muslim student until 1903 (Davison, 1961). This pattern of enrolment demonstrates the dominance of the French language over English during the eighteenth and nineteenth centuries. By 1913, Turkish students represented a mere seven percent of the total student body in American schools (Jenkins, 1925). In contrast, a French institution like St. Joseph's College boasted a student population where over half were Turkish.

Delving deeper into this phenomenon, it becomes imperative to examine the underlying factors that contributed to the English language's relative unpopularity among Muslim Turks during this period. One could posit that the reluctance to learn foreign languages wasn't exclusive to English. The root cause might stem from a broader mistrust of foreign, particularly Christian, influences (Davison, 1961, p.291). As a result, many Muslim families chose traditional religious schools for their children, harbouring concerns about whether these foreign institutions would align with the core values of Muslim society. Additionally, it's worth noting that the profiles of Turkish students who did opt for mission schools were likely different from their peers in conventional educational settings.

The latter half of the eighteenth century witnessed an array of reforms aimed at elevating governmental standards and satisfying societal demands for modernization.

During this period, while efforts were made to address minority expectations, Maarif-i Umumiye (Ministry of Education) placed special emphasis on forging a westernized educational model. This inclination was primarily driven by two motivations: bolstering military prowess and enhancing diplomatic capabilities.

Given this context, it is apt to begin our exploration of English language instruction by examining military schools and other establishments aimed at training civil staff. The westernization efforts that commenced with The Tanzimat Period play a pivotal role in shedding light on the genesis of foreign language education in the Ottoman system. Kirkgöz (2005) posits that this period marked the onset of transformative shifts in education. A series of military defeats arguably catalysed the introduction of Western foreign languages in schools under the aegis of Maarif-i Umumiye. The Empire's ambition, it seems, was to emulate Western benchmarks, especially in military technology, by inaugurating western-inspired military academies. These institutions incorporated foreign language modules, recognizing their potential to facilitate the transfer of European technological philosophies and innovations. With the counsel of European officers and experts, the curricula of these military schools underwent a redesign to reflect a more European orientation (Boyacıoğlu, 2015). However, it's worth noting that the English language didn't form the centerpiece of this new curriculum. Instead, French reigned supreme, underpinning its significance during that era.

In summary, the close of the Ottoman Era was marked by three significant institutions: the secular military schools inspired by the French education model, American educational institutions, and the general education structure, which was navigating tensions between traditional and contemporary approaches. It was in the American schools where English language teaching and English medium instruction were first introduced. The next chapter will explore the evolution of English medium instruction across other schools and the escalating prevalence of English as a foreign language throughout Turkish Republic.

### **The Development of English Language Teaching in Türkiye**

The period between the establishment of the Republic of Türkiye in 1923 and the 1950s was marked by a noticeable apathy towards foreign language education. This neglect can be attributed to the profound societal and linguistic transformations that the nation was experiencing at the time. Central to these changes was the Turkish Language Reform, which sought to purge Turkish of its predominantly Arabic and Persian influences. This reform was aligned with critiques of orthodox political liberalism, suggesting that nations have inherent biases in their language policies (Ricento, 2012).

This chapter delves into the macro policy changes and their applications in the field of English language teaching (ELT) in Türkiye, covering five distinct eras.

- i. 1923-1950: English started to be taught in the regular state schools.
- ii. 1950-1980: This era saw the establishment of new high schools with an emphasis on enhancing English language instruction quality.
- iii. 1983/1984-1996: This timeframe witnessed the introduction of two significant language policy shifts.
- iv. 1997 -2017: This period coincides with a substantial overhaul of the ELT curriculum.
- v. 2017 onward: New curriculum reform

To understand the diverse strategies employed for English language instruction across these periods, it's essential to consider Ricento's (2012) three delineated roles of English as a global language: English as an Agent of Linguistic Imperialism, English as a Vehicle for Social and Economic Mobility, and English as a Global Lingua Franca Necessary for Global Demos. These roles have sparked considerable debate about the perception of ELT. For many, English has long been viewed as a ticket to an improved quality of life, aligning with individual economic ambitions and dreams of transcending poverty (Brutt-Griffler, 2005). Yet, Bruthiaux (2008) contends that the influence of English in alleviating poverty isn't convincingly substantial. Thus, investing significant public resources in language instruction might be perceived as imprudent.

*The Period of 1923-1950: The Introduction of English in the Curriculum of Regular State Schools*

Despite the absence of a clear policy from the new government concerning foreign language instruction, English was integrated into the curriculum across different educational institutions. In 1924, the Ministry of National Education incorporated English into its new curriculum. The first year witnessed 3 hours of foreign language study weekly, which then decreased to 2 hours for the years 2 through 5. By 1927, both middle and high school students received 5 hours of foreign language instruction weekly, marking the highest allocation of time for this subject. Yet, from the 1930s onwards, the norm became a 3-hour weekly instruction. A significant difference existed between the ELT teaching methods and textbooks in regular state schools compared to English medium schools. In the period from 1923 to 1939, the grammar-translation method was the primary approach used for teaching English as a foreign language (Demircan, 1988).

Even with various initiatives, foreign language education was largely



neglected. Demircan (1981) asserted that the fundamental challenge in fostering a modern and developed Türkiye was the education of its society. Given the high rates of illiteracy prevalent in the initial decade of the Republic, it was clear that foreign language education wouldn't be a focal point.

### The Period of 1950-1980: The Spread of English in Türkiye and the Changing Policies in English Language Teaching

While numerous American and British schools were established prior to the formation of the Turkish Republic, the French language occupied a prominent position in the curricula of many minority and state-run schools. Yet, World War I and the subsequent establishment of the Turkish Republic marked a notable shift from French to English language instruction. Table 2 chronicles this evolving prioritization of foreign languages in Türkiye, highlighting the ascendancy of English as the dominant language from the 1950s onwards.

**Table 2**

*Chronological Change in Priorities Given to Foreign Languages in Türkiye (Demircan, 1988, p.16)*

| Order | Pre 1773 | 1773-1923 | 1923-1950 | 1950-1980 | After 1980s |
|-------|----------|-----------|-----------|-----------|-------------|
| 1     | Arabic   | Arabic    | French    | English   | English     |
| 2     | Persian  | Persian   | English   | French    | German      |
| 3     | Turkish  | French    | German    | German    | French      |
| 4     |          | English   | Arabic    | Arabic    | Arabic      |
| 5     |          | German    |           | Persian   | Persian     |

Phillipson (1992, 2008) ties the global proliferation of English to its function as an instrument of linguistic imperialism. He underscores English's pivotal role in the globalization processes, particularly in shaping the contemporary post-cold-war era of economic transformation and its influence within military organizations like NATO. Building on this perspective, the superiority of English over other foreign languages can be attributed to the profound shifts induced by globalization and its ramifications on local economies. Curriculum reforms, for instance, have been oriented towards nurturing a high-quality workforce capable of adapting to the evolving demands of this new economic landscape (Law, 2003, 2004). In the context of Türkiye, the rapid spread of English is more strongly correlated with the influence of American economic and military might than with European factors. As Tollefson (1991, p. 82) claims,

“The penetration of English into major political and economic institutions on every continent of the globe is a result of the economic and military power of English-speaking countries and the expansion of the integrated global economic market which they have dominated.

The processes that bring about the spread of English have come to be known as modernization”.

The shift to liberal capitalism in the 1950s created an imperative for English language proficiency in Türkiye, aiming to improve trade ties and technological advancement. The prime minister of that era emphasized in a speech the importance of leveraging foreign enterprise, capital, and technology. This led the government to forge closer ties, particularly with the USA, to adapt to a liberal economic framework. This momentum towards English, primarily as a tool to gain an edge in global economic competitiveness, places Türkiye within what Kachru (1992) terms the expanding circle countries. In these nations, English is treated as a foreign language in the curriculum, distinct from places where it's either the official or co-official language. Bamgbose (2003) posits that for such nations, the instrumental value of English is paramount, with globalization acting as a key catalyst for its spread. Consequently, prioritizing English language teaching became a strategic move for Türkiye, aiming to strengthen its ties with the Western world, especially for international communication and technical evolution, a trend underscored by the nation's increasing engagements with the United States (Kirkgöz, 2009).

Driven by the growing requirements of the business community and the educational targets set by policymakers, the curriculum underwent a significant revision. The goal was to produce graduates adept in English and equipped for the workforce. To address this gap, Anatolian High Schools were introduced in 1957. The primary distinction between regular state schools and Anatolian high schools lies in their foundational model. Anatolian High Schools took inspiration from Robert College, incorporating a year-long intensive English language program into their curriculum. Furthermore, these schools benefited from a specialized committee that undertook the task of textbook selection, ensuring materials were tailored to their unique educational approach. It was marked by enhanced quality of English teaching, driven by an updated curriculum and forward-thinking programs.

During the 1970s, students in middle school received 3 hours of English instruction per week, while those in high school spent 4 hours. The overarching goals of this period's foreign language curriculum were:

1. Foster a keen interest in foreign language studies,
2. Inspire students to further enhance their language skills beyond the classroom,
3. Emphasize the opportunity to broaden one's lexicon by mastering a new language,
4. Encourage students to strive for excellent pronunciation in their foreign language studies.

5. Empower students to voice their concerns using basic sentences derived from a 1,500-word middle school vocabulary list.

6. Instill in students the initiative to seek out and read foreign language books and magazines.

The inception of these elite English-focused schools and updated curriculum brought about a competitive spirit in the wider educational domain. This led schools to pay closer attention to the desires of both students and their parents. However, this increased focus often had a dual impact, potentially restricting the adoption of modern teaching techniques, a topic we'll explore in detail in the concluding chapter.

### *The Period of 1980-1996: Major Policy Changes*

Starting from the mid-1980s, English's global influence became increasingly evident in Türkiye, especially due to the close ties between Türkiye and the USA. This partnership significantly propelled the inclusion of English in school curriculums. The rising prominence of English as the international medium for various fields, including technology and commerce, underscored the urgency to refine the quality of English education.

An analysis of this spread warrants a socio-political lens. The establishment of Maarif Colleges played an instrumental role in altering the societal view towards English. These colleges churned out graduates tailored for the evolving global landscape, meeting Türkiye's need for a competitive edge. Their success sowed a profound yearning to master English among students, subsequently influencing their parents. Echoing this sentiment, Ahmad (1993) emphasized that English proficiency became an indispensable asset for success across diverse professions, driving parents to ensure their children's English fluency. This English globalization profoundly impacted secondary education in Türkiye (Friedman, 1994; Robins, 1996). This era is characterized by a heightened emphasis on English in secondary schools, with substantial policy shifts in English teaching and intense rivalry between state and private institutions.

Upon finishing primary education, students typically pursued further studies in General High Schools, Anatolian High Schools, or Private High Schools, with Anatolian High Schools standing out for their superior language instruction. Nonetheless, the available schools couldn't keep pace with the surging demand. The 1983 Foreign Language Teaching and Learning Act emerged as a pivotal policy initiative to streamline language instruction across various institutions.

Despite its intentions, the Act fell short, primarily because established standards in elite schools like Maarif Colleges or Anatolian High Schools couldn't be replicated in the General High Schools overseen by the Ministry. This gap in educational quality led to the rise of private schools, many of which hired native English speakers as instructors.

In 1992, an enhanced program, known as the “Foreign Language Intensive Programs,” was introduced in 28 schools, emphasizing a more intensive approach to language instruction. Gunes (1996) conducted a comprehensive study that covered 70 high schools and found that:

1. Despite the program's aim to integrate the four language skills, reading comprehension was the most emphasized skill, while speaking was the least focused on;

2. The curriculum was tailored to meet the students' needs;

3. The most prevalent teaching method was pair work and group work. Interestingly, there was a disparity in the perceived dominant teaching method: while administrators and students believed the audio-lingual method to be most commonly employed, teachers identified it as the eclectic method;

4. There was a unanimous belief among all the participants that introducing another foreign language as an elective, alongside English, would be beneficial

Furthermore, several experts noted that English-medium schools had the autonomy to choose their own textbook (pending approval from the Ministry). In contrast, regular schools were obliged to utilize books designated by the Ministry of Education. Unfortunately, these prescribed books were generally outdated, relied on old methods, and failed to satisfy the specific needs of Turkish students, posing a significant drawback in the educational landscape. An additional pertinent issue was the pronounced shortage of skilled foreign language teachers, particularly those specializing in English, which further compounded the challenges faced in the field of English language teaching.

The dominance of English in the realms of science and technology hasn't gone unnoticed by the Higher Education Council (YÖK). Echoing Grabe's (1988) assertion that for a nation to modernize or compete technologically, mastering English is crucial (p. 65), YÖK initiated the Higher Education Act in 1984. This act required all academic programs, including those taught in Turkish, to integrate English courses.

By 1996, YÖK set guidelines for universities wishing to offer courses in English. This involved ensuring faculty had a strong command of the language, which led to many educators pursuing further studies in English-speaking countries or universities recruiting native English speakers. Recognizing

the existing gap in English proficiency among incoming students, primarily due to insufficient high school instruction, YÖK advocated for in-house Schools of Foreign Languages. This initiative not only saw a rise in English teaching departments, peaking at a hundred in 2017, but also emphasized the importance of quality English learning materials. Consequently, there's been a notable influx of imported English textbooks, particularly for foundational courses.

### *Education Reform in 1997*

The 1997 education reform can be considered a significant milestone in foreign language education. Before this reform, English was only part of the curriculum in secondary schools. However, as globalization's influences permeated the country, especially the public education system, there was a notable shift. State schools began viewing learners as 'targets', evident in the growing adoption of managerial discourses and registers similar to the private sector. This change is consistent with the contemporary global dynamics. Today's governments face the challenge of competing with analogous economies to harness the benefits of free capital movement. Consequently, this has ushered in managerial tactics and ideologies into public education. Addressing the disparity in English Language Teaching (ELT) quality between state and private schools became imperative. As a result, the structures and policies of language teaching underwent significant modifications during this period. In this context, both students and their parents were seen as clients, with the primary goal of schools being to meet their English education expectations.

Furthermore, globalization has exerted pressure on traditional ELT classroom practices and school systems, necessitating substantial reform. Policy makers responded by integrating insights from various empirical studies on second language acquisition. This reform overhauled the foreign language curriculum, introducing English instruction as early as the fourth grade, aiming to elevate the quality of ELT. This decision was deeply rooted in the prevailing academic consensus that the age at which one starts learning a foreign language plays a pivotal role in its acquisition. Numerous studies on the subject have indicated that children tend to learn foreign languages more rapidly and effectively than adults (Krashen et al., 1982; Singleton & Ryan, 2004; Patkowski, 1980). Aligning with the Council of Europe's 2002 recommendations, six was established as the age to commence English instruction nationwide. However, despite the reforms and newly designed curricula, the emphasis wasn't on diverse teaching methodologies. The spotlight remained on conventional grammar-oriented pedagogies, overshadowing the communicative dynamics of language education. Recognizing this limitation, a novel English curriculum was introduced in 2006 for various academic levels.

Similar to the 1997 curriculum, the latest curriculum emphasizes a communicative approach in ELT, reaffirming the teacher's role as a learning facilitator. For each grade, specified goals and objectives are paired with related structural items. These are exemplified through topics, functions, and sample tasks or projects. This structure follows a functional-notional and skills-based model. The expected linguistic and communicative competencies for learners at the end of each grade are also detailed. The updated language policy not only highlights the value of improving English communicative skills among learners but also brings a transformative shift in assessment methods. The previously prevalent 'paper and pencil' tests in Turkish state primary schools (Kirkgöz 2006) are now regarded as outdated. The focus has moved to performance-based evaluations, suggesting portfolios as the assessment tool, which resonates more with communicative language teaching principles.

### *New Curriculum Reform in 2017*

In January 2017, The Ministry of National Education of Türkiye proclaimed a comprehensive curriculum reform, which would be effective from the 2017-2018 academic session. This revision, encompassing English language courses, enhanced the number of units for fifth-grade students. With this update, the ministry augmented the number of units in the English courses for fifth graders, aiming to gradually transition this grade into a foundational year for foreign language study in the subsequent years.

The curriculum's intent is twofold: on one hand, it emphasizes enhancing students' speaking and reading proficiencies, yet another section mentions an increased focus on augmenting the writing and speaking skills of students, which are presently underrepresented in the ongoing curriculum. Such diverging objectives could pose challenges during practical classroom execution. Moreover, the inclusion of chapters heavily centered on scientific and technological jargon aims to heighten student familiarity and embed these terminologies into the coursework. Another notable adjustment is the diminished emphasis on grammar, with a pivot towards dedicating more classroom hours to refining writing skills.

### **Conclusion**

This chapter presents the progression of ELT in Turkish educational settings, categorizing its trajectory into two distinct eras: from English's first presence in Turkish education to the latest policy changes. It's evident from the discussion that fostering English proficiency across Turkish educational settings has persistently posed significant hurdles. With the increased importance of English in foreign language education, the Turkish authorities have undertaken several measures, with pronounced shifts in curriculum and instructional strategies. Prompted by shifting economic and political dynamics, there is a heightened focus on equipping citizens,

especially the youth, with adaptable language competencies. Consequently, Türkiye finds itself amidst a wave of innovation and transition in the field of ELT, prominently within the primary education sector, to synchronize with European language education standards, refining both the ELT syllabus and the assessment system.

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# Chapter 2

## **DRAMA PEDAGOGY IN GERMAN AS A FOREIGN LANGUAGE LESSONS**

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## 1. Introduction

In today's globalised world, where communication skills and intercultural understanding play a central role, the teaching of foreign languages is becoming increasingly important. The ability not only to understand languages but also to use them actively and contextually is crucial. Drama pedagogy, as an innovative method, offers new ways to make language teaching more effective and engaging. This approach, which integrates the principles of theatre and dramatic performance into the learning process, makes it possible to experience language in a practical and emotional context. This increases learners' motivation not only to learn languages, but also to experience and use them in a lively way.

The use of drama in language teaching not only develops language skills, but also important soft skills such as teamwork, empathy and critical thinking. Through role-playing, scenic interpretation and creative performance, learners are placed in interactive situations that simulate real-life communication situations. This type of learning builds confidence and helps learners overcome language barriers. It also promotes deeper cultural understanding as learners gain insight into the cultural nuances and values of the target language by immersing themselves in different roles and contexts.

The challenge, however, is to effectively integrate drama pedagogy into existing language teaching. It requires careful planning and curriculum adaptation to introduce these methods seamlessly. It also requires specialised training for teachers to successfully implement drama pedagogical techniques. Attention to different learning styles and levels is essential to ensure that all learners can benefit from this method. The integration of drama pedagogy is therefore a promising but challenging innovation in the field of language teaching which, if used correctly, has the potential to fundamentally change the way languages are taught and learnt.

The aim of this article is to develop a comprehensive understanding of the role and potential of drama pedagogy in the context of teaching German as a foreign language, using scenic play as an example. It will show how drama pedagogy not only improves learners' language competence and communicative flexibility, but also fosters deeper cultural understanding and increased social sensitivity, thus expanding and enriching the traditional boundaries of language teaching. The paper begins by examining drama pedagogy in foreign language classes, including the origins of drama pedagogy, its role in the foreign language classroom, its aims and the so-called drama pedagogical process (Section 2). This is followed by a detailed examination of the structural and pedagogical requirements for successful drama pedagogy in foreign language classes (Section 3). Both the theoretical conditions (Section 3.1.) and the practical aspects of implementing and structuring such

teaching programmes (Section 3.2.) are examined. For the concrete practical application of drama pedagogy in the sense of scenic play in German as a foreign language lessons, four different drama pedagogical exercises are used as a basis and illustrated, whereby the practical challenges and successes of implementing drama pedagogical approaches in the classroom are also highlighted (Section 4). Finally, the findings are summarised and an outlook is given on future developments and areas of research in the field of combining drama pedagogy and foreign language teaching (Section 5). This concluding reflection aims to highlight the importance and potential of drama pedagogy as an innovative and effective approach to language learning, and to suggest possible directions for future research and practice.

## **2. Drama pedagogy in foreign language teaching**

The origins of drama pedagogy in foreign language teaching can be traced back to Great Britain in the 1950s, when drama was first integrated into teacher training (cf. Schewe 2015, 23). For German-speaking countries, Manfred Schewe's work *Fremdspracheinszenieren* (1993) [*Staging foreign language*] was the first study inspired by English drama pedagogy to shed light on the possible applications of drama pedagogy in foreign language practice. It developed the concept of "teaching as sensory design" and "drama as a pedagogical art form", emphasising the versatility of drama pedagogical approaches in all aspects of language teaching, including vocabulary, pronunciation and comprehension of listening and reading material (Schewe 2015, 24). This also marked the beginning of a more intensive academic debate on drama pedagogy in language teaching in Germany, including Tselikas (1999), Even (2003), Huber (2003), Kessler (2008) and Jäger (2011). The field of drama pedagogy is now being explored internationally and includes a variety of practical and theoretical approaches from disciplines such as drama and theatre education, linguistics, psychology and sociology, which enrich drama pedagogy in the context of foreign language teaching.

Drama pedagogy is a creative and interactive approach to foreign language teaching based on the use of elements of the dramatic arts, primarily theatre, but also film, performance art and storytelling. It uses 'as-if' situations in foreign language teaching to create mostly fictional situations in which learners of a foreign language can learn new content and build social relationships by trying, experiencing and acting out. On the one hand, drama pedagogy therefore involves foreign language content and social learning (cf. Passon 2015, 70). On the other hand, drama pedagogy can also be used to achieve holistic learning (cf. Neis 2021, 34-39). This emphasises "the consideration of affective and physical aspects of learning alongside the traditionally privileged cognitive aspects" (Klippel 2000, 242). This is also made clear by the following guiding principle of drama pedagogy: "In drama pedagogical foreign language teaching, learning and teaching takes place with

head, heart, hand and foot!” (Schewe 1993, 8). The focus of drama pedagogy is not on the end result, such as the performance of a prepared play, but on the process of development from beginning to end. This is also made clear in the following statement by Tselikas (1999, 21): “The focus is [...] not primarily on the result, namely the production of a play, but on the learning process in all its dimensions: physical, aesthetic (sensual), emotional and cognitive”. (see also Linck 2008, 72).

The main aim of drama teaching is to train speaking skills, with the process being more important than the product. Oelschläger distinguishes between three types of speaking exercises (cf. Oelschläger 2004, 27):

1. exercises that prepare communication;
2. exercises that build and structure communication;
3. exercises which simulate communication.

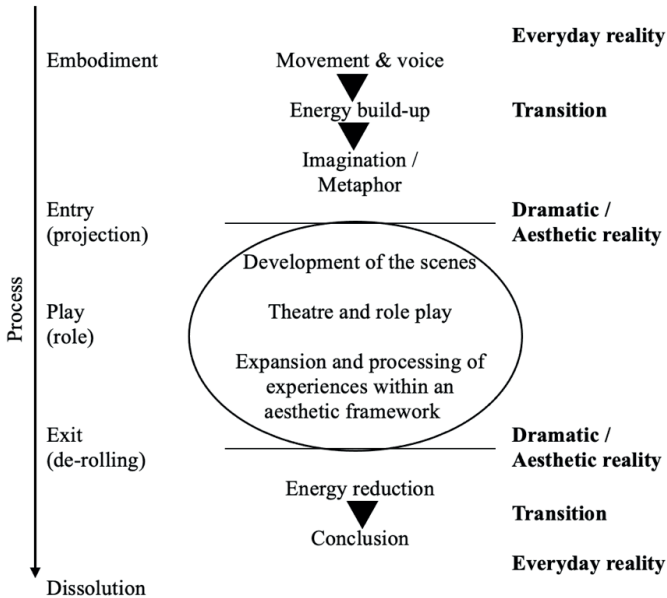
The multisensory approach to language learning offered by drama pedagogy, which integrates different sensory perceptions and forms of experience, promotes a more comprehensive and lasting retention of language and learning content, which is a significant advantage over traditional, often one-dimensional teaching methods (see also Elis 2015, 90 and 112-113). In addition to language learning, drama also promotes “instrumental learning, social learning, expressive learning and aesthetic learning. All these levels are not only important for foreign language behaviour, but also prove to be useful in dealing with the challenges of everyday life in the mother tongue”. (Tselikas 1999, 37). The integration of drama pedagogy in foreign language teaching also promotes the automatic “appropriation of the social reality of the target country” (Oelschläger 2004, 28), networked learning (writing, speaking, reading) and, last but not least, intercultural learning (cf. Oelschläger 2004, 28).

In foreign language teaching, drama - and theatre in particular - represents a new fictional reality in which the actors, i.e. the learners, have to speak, think and act in different roles, analogous to their everyday world. To create such a second reality, theatre uses elements such as metaphors, symbols, roles and emotions. Tselikas (1999, 22) describes these four aspects of theatre as follows:

*Metaphor* makes it possible to create a representative example in order to gain a broader understanding of a subject [...]. *Symbols* are objects or images that embody a particular meaning [...]. [...]. The *role* offers a variety of opportunities for empathic understanding and new, unfamiliar experiences and behaviours. [...]. Dramatic contexts [...] tend to highlight and focus attention on the *emotions* involved in a situation.

According to Tselikas (1999, 24), the dramatic pedagogical process in foreign language teaching can generally be divided into the phases of *embodiment*, *entry*, *play*, *exit* and *resolution*, and illustrated graphically with their respective contents as follows:

**Figure 1:** *The dramatic pedagogical process (Tselikas 1999, 24)*



In the first phase, the phase of *embodiment*, warm-up exercises for the voice and relaxation exercises for the body take place on the one hand, while on the other hand the imagination of the characters is stimulated with the help of images and metaphors (cf. Tselikas 1999, 25). At the same time, there is a transition from everyday reality to dramatic or aesthetic reality, which also marks the phase of *entry*. Here the learners are confronted with the questions “who?”, “where?” and “what?”, which flow smoothly into the role constellations and characters of the figures to be played (cf. Tselikas 1999, 25). The main part of the drama pedagogical process, the phase of *play*, consists of developing possible scenes, discussing them, putting oneself in the shoes of the characters and, above all, incorporating one’s own experiences in order to finally present the developed scenarios to the audience (cf. Tselikas 1999, 25). The transition from dramatic or aesthetic reality to everyday reality describes the final phase of the drama pedagogical process, the phase of *exit*: the actors detach themselves from the roles they are playing and the fictional situation and return to their own real world, which is signalled by the *dissolution* (cf. Tselikas 1999, 25).

### 3. Integration of drama pedagogy in foreign language classes

In order to successfully integrate drama pedagogy into foreign language classes, it is essential to first outline the basic conditions that enable the application of drama pedagogy in this educational context (see Section 3.1). Once these basic conditions have been established, a comprehensive elucidation of the structural configuration of drama pedagogy in foreign language classes can be defined in more detail (see Section 3.2).

#### 3.1. Conditions for drama pedagogy in foreign language classes

For the successful integration of drama pedagogy in the foreign language classroom, the following ten conditions can be identified which, taken together, contribute to the use of drama pedagogy in the foreign language classroom as an enriching and effective teaching method that develops both the language skills and the general communicative competence of the learners.

**(a) Language skills of the target group:** In order to be able to use drama pedagogy effectively in foreign language teaching, the teacher must first differentiate the group less by age and country of origin than by their current language level (cf. Oelschläger 2004, 26). Only in this way can the teacher meet each individual where they are linguistically, build on this and support them at the appropriate level. While drama pedagogy can in principle be used at all language levels, the activities should definitely be adapted to the language level of the learners. This is important to avoid overwhelm and frustration and to ensure that learners remain both motivated and able to benefit effectively from drama pedagogy. Such level adjustment creates a conducive learning environment that meets learners' individual abilities and needs and supports their language acquisition process.

**(b) Cultural Context and Cultural Sensitivity:** Cultural sensitivity in drama education means developing an awareness and understanding of the cultural differences that exist in the target language and its culture. This means that teachers and students learn to respect and understand the cultural contexts that shape the language. By integrating cultural content into drama pedagogical activities, learners gain insights into the lifestyles, values and traditions of the target culture, leading to deeper and more holistic language competence.

**(c) Engagement and motivation:** Drama pedagogy requires and increases student engagement and motivation by promoting active and experiential learning. It involves students directly in the learning process and allows them to experience language in a contextual and meaningful way. Dramatic activities that incorporate fun and creativity make the subject matter more lively and engaging, which increases learners' intrinsic motivation.



The active experience promotes not only interest in the language but also self-efficacy and confidence in one's own language skills.

**(d) Collaboration and group work:** Collaboration plays a central role in drama pedagogy. Encouraging group work and interaction between students is of great importance. Through collaborative drama activities, pupils develop skills such as teamwork, communication and empathy. They learn to understand different perspectives and to find creative solutions together. This not only strengthens their language skills, but also promotes the social and emotional skills that are essential for holistic learning.

**(e) Safety and trust:** Creating a safe and trusting atmosphere within drama education is essential. This allows students to express themselves without fear of judgement or criticism. An environment that promotes safety and trust encourages students to take risks, try out new language skills and participate actively in the classroom. The teacher-student relationship plays a key role in this, as trusting interactions build learners' confidence and create a more open, effective learning environment.

**(f) Creative space:** The design of a creative space in drama education, both physical and metaphorical, is essential for the free expression and development of creativity. Such a space allows students to experiment without inhibition and to express their ideas freely. This promotes not only linguistic competence but also personal and creative development. A creative space can be created by providing an open, supportive environment, by providing a physically open space (see g) and by providing materials and resources that stimulate creative thinking (see h).

**(g) Space and time:** In terms of space, as already mentioned in (f), open rooms that are not equipped with fixed furniture are suitable (cf. Oelschläger 2004, 29). Participants should be able to choose the furniture or objects they need for their presentations and work. In addition, an open room is more likely to motivate foreign language learners to move around and play with and in the room. Chairs should always be available so that the working groups in the development phase (see section 3.2, b) and the audience in the presentation phase (see section 3.2, c) have places to sit. In terms of time, workshops lasting several hours/days offer ideal conditions for drama-based foreign language teaching (cf. Oelschläger 2004, 29). However, even fifty-four minute language lessons can contain drama elements if the teacher has thought and planned them well in advance. Of course, the individual drama-pedagogical forms must take place in shorter units than, for example, in a workshop (cf. Oelschläger 2004, 29). Oelschläger also recommends "familiarising the learners with the methods of scenic play as quickly and as often as possible in order to achieve similarly short and effective preparation times" (Oelschläger 2004, 29).

**(h) Materials and techniques:** Variation of materials and techniques in

drama pedagogy is essential to make lessons dynamic and engaging. Suitable materials for using drama pedagogy in foreign language classes are texts that can be used according to the language level of the students: Short stories, simple poems suitable for improvisation and still pictures. Students can also “ask questions of the text” (Oelschläger 2004, 26) in order to better identify with the situation or the characters. Foreign language learners at a higher level can retell texts, invent a different ending to a story or, for example, put on a short play (cf. Oelschläger 2004, 26). Another suitable material for the use of drama pedagogy in foreign language teaching is pictures and photos, which can be used, for example, to create still pictures and to tell a story with many different photos arranged in a row (cf. Oelschläger 2004, 27). These materials can be accompanied by various dramatic techniques such as role play, improvisation, scenic writing and physical expression training. Taken together, these materials and techniques provide varied learning experiences that cater for different learning styles, encourage creativity and promote a comprehensive understanding of linguistic and cultural content. This in turn can help students to participate actively and creatively in the learning process, increasing their motivation and engagement.

**(i) Integration and flexibility within the curriculum:** The integration of drama pedagogical activities into the existing curriculum should be done in such a way that they are closely linked to the learning objectives of the language course. This means that drama pedagogical elements should not be seen as isolated activities, but should be embedded in the overall structure of the course. They should be thematically relevant and develop competences defined in the curriculum. This will ensure that students develop not only dramatic skills, but also the linguistic and cultural objectives of the course. At the same time, flexibility in the curriculum is also crucial for drama pedagogy to allow for spontaneous and creative activities. A flexible curriculum makes it possible to respond to students’ needs and interests and to make the class more dynamic and interactive. Teachers can respond to unforeseen learning moments and use them for the educational process. This adaptability not only encourages creativity, but also contributes to the development of a broader understanding of the language and culture. Flexibility in the curriculum supports a learner-centred environment in which students actively participate in the learning process.

**(j) Reflection and evaluation:** Reflection and evaluation in drama education are essential to deepen the learning process and optimise language development. Through reflection, learners gain insight into their own learning progress and challenges, which contributes to self-assessment and goal setting.

Evaluation, on the other hand, enables teachers to assess the effectiveness of drama pedagogical methods and adapt their teaching accordingly. These processes promote more conscious learning and continuous improvement of teaching.

### 3.2. Structure of a drama-based foreign language lesson

The structure of a drama-based foreign language lesson can be considered analogous to the structure of a traditional lesson. Ideally, it should begin with a *preparatory and introductory phase* in which the learner is prepared for the topic and familiarised with the task (cf. Oelschläger 2004, 30). This is followed by a joint discussion, usually in small working groups, of the possible scenes proposed by the group members in the *elaboration phase*, so that at the end of this phase a joint result is achieved. This result is then performed in the final phase, the *presentation phase*, in front of the other course participants. This should always be followed by a short reflection on the ‘performance’. This can be in the form of constructive criticism from the other students or in the form of questions from the teacher to the students. This allows the teacher to check whether the other learners have understood the scene presented and/or whether there are still unanswered questions. The three phases of the structure are analysed in more detail below:

**(a) Preparatory and introductory phase:** The preparatory and introductory phase in drama-based foreign language lessons is of great importance. It serves to motivate the learners for the interactive lessons and to facilitate the transition from traditional ‘seated lessons’ to dynamic ‘interactive lessons’ (cf. Oelschläger 2004, 30). Here, motivating activities such as warm-up exercises with targeted vocal exercises and articulation training are crucial to activate students and encourage a playful approach to language. The aim is to create an environment in which pupils feel free to be creative and experiment, while at the same time minimising the pressure to learn, for example through movement exercises and playful interaction (cf. Oehlschläger 2004, 31). In other words, the aim of this phase is to motivate participants to experience spontaneity in play and to allow them to use language in a playful way. The teacher plays a crucial role in structuring and clarifying the task to ensure that all participants understand the objectives and expectations, i.e. are prepared for the topic and have really understood the task. It is important that the teacher sets the task in a clear, unambiguous and well-structured way and ensures that everyone in the course has fully understood the task. To this end, the task should be set precisely on a worksheet which the students can always refer to if anything is unclear (cf. Oelschläger 2004, 31). All in all, this crucial phase must be well prepared, structured and motivating for everyone (cf. Wittal-Dürkop 2019, 16). The whole group is divided into small working groups and the participants are asked to work on the given task. It is necessary to set a fixed time limit for the whole course (cf. Oelschläger 2004, 31).

**(b) Elaboration phase:** In the elaboration phase of drama-based foreign language lessons, learners work independently on the task in the different working groups. The emphasis is on the learners' own initiative, i.e. on the collaborative process of discussing different possibilities, working out and testing ideas together and finally agreeing on a unified result. This phase is central to drama-based foreign language teaching and requires the most time to develop creative and linguistic skills. Teachers only play an observing role in the background and provide support only when necessary, i.e. when questions arise (cf. Oelschläger 2004, 31). Interventions in group work, e.g. by directing group discussions, correcting mistakes or pointing out errors, should be avoided in order not to disrupt the learning process and to strengthen the learners' independence and self-confidence in their language skills. The focus is not on a perfect final product, but on the learning process and the creative development itself, i.e. discussion, negotiation, suggestions and self-confidence within the group when trying out the individual scenes.

**(c) Presentation phase:** In the presentation phase of a drama-based foreign language course, the different working groups present their results to the other participants in the form of performances, short plays, dialogues, still images and the like. In order to ensure a respectful and constructive atmosphere, it is essential to follow the theatre rules that have been established and discussed with the whole course. These rules include etiquette during the presentation (How do you behave when others are presenting?) and the spatial organisation of the stage and audience (Where is the stage? Where is the audience?). The conditions under which the presentation takes place, such as time limits and technical requirements, must also be taken into account (cf. Oelschläger 2004, 32). Overall, this phase enables learners to present their work and receive feedback, thus rounding off the learning process.

#### **4. Practical example: Scenic play in German as a foreign language lessons**

This chapter presents four exercises on the use of scenic play in the teaching of German as a foreign language that can be used by teachers. On the one hand, there are two warm-up exercises, 'Mechanical Engineering' and 'Counting and Walking', which serve primarily to motivate, combine language and movement and loosen up. On the other hand, there is a pantomime exercise on proverbs and idioms in German, and a still image exercise on 'Snow White in Still Images'. A tabular overview of these exercises is given below, together with the description, breakdown, special features or difficulties, the theoretical background such as curriculum, space and time, and the practical implementation in the form of instructions from the exercise leaders and presentations and comments on the respective exercise forms.

|   | Warm-up exercise 1<br>'Mechanical Engineering'   | Warm-up exercise 2<br>'Counting and Walking'  | Pantomime exercise<br>Proverbs and idioms of the<br>German language  | Still images exercise<br>'Snow White in Still Images'  |
|---|--|---|--|--|
| <b>Description</b><br><i>The participants should...</i> | ... use their legs/arms and hands to create an interactive machine that can only work if all the machine's linking elements are coordinated.   | ... move around the room. While the people in group 1 take it in turns to say all the even numbers out loud, the pupils in group 2 take it in turns to say all the odd numbers. | ... guess which proverb or phrase a group member is pantomiming.<br><br>Examples:<br>- "Da dreht sich der Hund in der Pfanne." ("That's topsy-turvy" or "That's completely backward.")<br>- "Wer anderen eine Grube gräbt, fällt selber hinein." ("He who digs a pit for others will fall into it himself.") | ... read an extract from 'Snow White' and come up with their own stills for certain paragraphs. The aim is to present the individual still images to another group, who then have to guess which story/fairy tale it is.   |
| <b>Splitting up the entire group</b>                    | Each 'machine' consists of 4-5 course participants.<br><br>The groups are always formed anew.  | The entire group is divided into two groups of equal size.<br><br>The groups are always formed anew.  | The entire group is divided into two groups of equal size.<br><br>The groups are always formed anew.   | Groups of 4-5 participants are formed.<br><br>The groups are always formed anew.   |
| <b>Special feature/ Difficulty</b>                      | - Observation of all elements: "When is it my turn?"<br>- The machine can only work properly if everyone pays attention and actively participates<br>- Motivation through group cohesion | - Concentration on the own group<br>- Linking language and movement<br>- Motivation through group cohesion  | - Learning the proverbs and idioms of the target country in a playful way<br>- Familiarisation with the vocabulary of the language<br>- Linking language and movement<br>- The performer must first think about how they can act out the proverb (which may be unknown to them)<br>→ Signal words            | - Understanding the text<br>- Discussion, defining the individual paragraphs (recognising important elements)<br>- Testing, suggesting the individual still images<br>- Common result<br>- Coherent sequence of the individual still images to be able to retell the story well<br>→ Only suitable for more advanced language learners |

| Theory   |   |  |   |  |
|--|---|--|---|--|
| <b>Orientation towards the teaching panel, e.g.:</b> | - <i>Holistic learning:</i> Gaining new experiences, non-verbal communication<br>- <i>Open teaching situation:</i> Impulses from the teacher; language practice in contact with the group participants<br>- <i>Play as a trial activity:</i> Group work makes it possible to use the language learnt → Mistakes are allowed!<br>- <i>Vocabulary work:</i> Appropriate formulations in conversation with group members, use of previously learnt words |  |   |  |
| <b>Space</b>   | - Open space with a 'stage' for the performer<br>- Chairs for the 'audience'  | Completely open and (if possible) empty space/room             | - Open space with a 'stage' for the performer<br>- Chairs for the 'audience'  | - Open space<br>- Seating for the group (possibly with a table for storing writing utensils)<br>- Ready-to-hand furniture on the sides of the room (these may be needed for still images)<br>- Chairs for the 'audience' |
| <b>Time</b>  | 5-10 minutes  | 5-10 minutes   | Approx. 20 minutes  | Elaboration phase: approx. 20 minutes<br>Presentation: approx. 5-10 minutes  |
| Practice   |   |  |   |  |
| <b>Instructions</b><br><i>The teacher...</i>         | ... explains the task precisely to the group and ideally shows them a short example (film, photo) or asks a few participants to act out the exercise together with them. The teacher then stays in the background.  | ... first explains the task and then stands in the background. | ... prepares flashcards or similar with proverbs/phrases (easier or more difficult depending on language level → differentiate!) and explains the task to the group. Then the teacher stands in the background. | ... hands out the extract from the fairy tale on a worksheet with exact/ precise instructions and explains the task again orally.  |
| <b>Presentation</b>                                  | - Presentation of the "finished machine" to the other group   | -  | -   | - Presentation of the still image sequence of the other group  |

| Comments |   |   |  |  |
|----------|---|---|--|--|
|          | The other participants can stop, change, or rearrange the machine at any time during the presentation. This can be done verbally ("Number two please switch with number one!") or actively (by walking over, moving people around or holding a 'link' in the hand).<br>→ All participants are included.<br>→ Motivation and enjoyment throughout the course | The teacher can give new impulses during the game: All tens should be named, etc.<br>→ Active participation of all participants during the movement<br>→ Group cohesion through the common task | The pantomime can possibly be accompanied by sounds. | - The audience can tap on one of the performers at any time to ask about their emotional state, etc. To ask about their feelings, etc.<br>- The teacher can stop the sequence of stills at any time and ask a member of the audience: "What do you think/feel in this situation?"<br>- After a successful run through the sequence, the team can start again. This time the teacher/spectator stops the sequence at any point and the audience have to perform the sequence spontaneously in groups according to their own wishes. |

#### 4.1. Warm-up exercise 1 ‘Mechanical Engineering’

In this dynamic and creative exercise, students work in groups of 4-5 to create an interactive ‘machine’. They use their legs, arms and hands to simulate the various connecting elements of a machine. The highlight of this exercise is the necessary coordination and cooperation of all group members, as the ‘machine’ only works if each element is perfectly coordinated with the others. The composition of the groups is changed regularly to allow for different dynamics and forms of cooperation. During the exercise, participants should be attentive and observe each other to know when it is their turn. This not only encourages each individual to pay attention, but also to understand the interaction within the group. A key element of this exercise is motivation through group cohesion. The machine can only work properly and efficiently if everyone is actively involved and can rely on each other. This builds team spirit and cooperation, which in turn leads to a successful and functioning ‘machine’.

In a theoretical sense, the ‘machine’ warm-up exercise offers a holistic learning experience in which participants not only gain new experiences but also practise non-verbal communication skills (see, for example, Surkamp 2016). In an open classroom situation, the teacher provides stimuli while the participants practise their language skills through contact with other group members. The exercise thus allows language to be used in the context of play, with play acting as a kind of trial activity. In group work, participants can use the language they have learnt and mistakes are explicitly allowed. This approach promotes a relaxed learning environment and takes away the pressure to be perfect. Vocabulary work is an essential part of the exercise. Participants are encouraged to find appropriate phrases in conversation with group members and to use words they have already learnt. This strengthens not only their language skills but also their communicative flexibility.

The exercise takes place in an open space that provides a ‘stage’ for the actors and chairs for the ‘audience’. This arrangement supports a clear separation between active participants and observers, creating a structured and focused learning environment. The whole activity is designed to last 5-10 minutes, allowing for an intense but well-timed learning experience. This keeps the exercise dynamic and engaging without overwhelming the participants.

On a practical level, the trainer begins with a brief explanation of the task to ensure that all participants understand the objectives and process of the exercise. To illustrate the concept of the exercise, the trainer should ideally show a short example, either in the form of a film or a photo. Alternatively, the trainer can ask some participants to act out the exercise in front of the group. This practical approach will help the participants to better understand

the task and to prepare for their own performance of the exercise. After the introduction, the teacher withdraws and leaves the stage to the participants to encourage their creativity and cooperation. During this phase, the group members work together to build their 'machine' and put into practice the concepts they have learnt.

The culmination of the exercise is the presentation of each group's 'finished machine' to the other participants. These presentations provide an excellent opportunity to show the results of teamwork and to recognise the diversity of approaches and ideas within the different groups. This part of the exercise not only encourages learning and application of what has been learnt, but also allows the creative effort and commitment of each group to be recognised.

The 'Mechanical Engineering' warm-up exercise is characterised by its high degree of interactivity and the involvement of all course participants. In this exercise, students have the unique opportunity to intervene at any time during the presentation of the 'built machine'. These interventions can stop, change or reposition the machine.

Interestingly, the interaction can be both verbal and active. For example, a participant can give verbal instructions such as "Number two please swap with number one!". Alternatively, participants can actively intervene in the action by walking up to the performers, moving people around or holding a 'link' with their hand. This approach ensures that all participants are actively involved in the learning process and can contribute both their communicative and creative skills.

The overall aim of the warm-up exercise 1 'Mechanical Engineering' is to promote motivation and enjoyment throughout the course. Through direct involvement and the opportunity to co-create, an engaging and lively learning environment is created in which participants are encouraged to collaborate and think creatively. This method helps to create a positive and stimulating course environment where everyone can contribute and be part of the shared learning experience.

#### **4.2. Warm up exercise 2 'Counting and Walking'**

The 'Counting and Walking' warm-up is an energetic activity designed to promote the link between language and movement. For this exercise, the whole group is divided into two equal groups, changing the composition of the groups regularly to create variety and new dynamics. Participants move freely around the room. Meanwhile, each group concentrates on its own task: the people in group 1 take turns to say out loud all the even numbers, while the people in group 2 take turns to say out loud all the odd numbers. This structure not only encourages concentration on one's own group and the task at hand, but also

combines cognitive thinking (counting) with physical activity (walking).

An important aim of this exercise is to increase motivation and group cohesion. By regularly reorganising the groups, participants learn to adapt quickly to new team constellations and to interact with different group members. This dynamic and interactive exercise creates a lively learning environment in which both individual and collective performance is encouraged. The combination of movement and language application makes ‘Counting and Walking’ an effective and fun way to develop concentration and team spirit in the group.

From a theoretical point of view, the ‘Counting and Walking’ warm-up focuses on holistic learning, where new experiences are gained and non-verbal forms of communication are explored. The open-ended nature of the lesson provides many opportunities for the teacher to encourage language practice in contact with the group. The element of play, understood here as experimental behaviour, also plays an important role in this setting. The group work is organised in such a way that the participants have the opportunity to use the language they have learnt, with mistakes being accepted and even welcomed as part of the learning process. A key aspect of the course is vocabulary work. Students are encouraged to find appropriate phrases in conversation with their group members and to use words they have already learnt. This activity aims to improve both fluency and accuracy in the use of language.

This warm up requires a completely open and, if possible, empty room. This open space encourages the creativity and mobility of the participants and allows them to express themselves and interact without spatial restrictions. The duration of the lesson is set at 5-10 minutes. This time is sufficient to engage the participants without overwhelming them and ensures that the activity remains dynamic and focused. Overall, this session provides a balanced mix of creative expression, language practice and physical movement, creating a stimulating and holistic learning experience.

From a practical point of view, the teacher initially plays a central role in explaining the task. Once the participants have understood the instructions, the teacher takes a back seat, leaving room for initiative and creativity. During the game, however, the teacher remains attentive and ready to provide new stimuli. This could be, for example, calling out all the tens or introducing other variations of the counting game. Such stimuli are essential to encourage the active participation of all participants during the movement. They keep the game dynamic and challenge participants to engage both physically and mentally.

The overall aim of this exercise is to strengthen group cohesion through the shared task. By involving all participants in the activity and requiring them to focus on common goals, a strong team spirit is encouraged. This



method creates an environment that emphasises cooperation and mutual support, while at the same time training cognitive and physical skills. The warm up exercise ‘Counting and Walking’ is therefore not only a warm-up exercise, but also a valuable experience in team learning and group dynamics.

### **4.3. Pantomime exercise on German proverbs and idioms**

This lively and interactive pantomime exercise focuses on learning German proverbs and idioms in a playful way. Participants are asked to guess which proverb or idiom a member of the group is pantomiming. Examples of such idioms could be “Da dreht sich der Hund in der Pfanne.” (“That’s topsy-turvy” or “That’s completely backward.”) or “Wer anderen eine Grube gräbt, fällt selber hinein.” (“He who digs a pit for others will fall into it himself.”). For this exercise, the whole group is divided into two groups of equal size and the composition of the groups is changed several times. This encourages flexibility and adaptability and creates a dynamic learning atmosphere. A central element of this exercise is the use of German vocabulary. Participants learn not only the meaning of proverbs and idioms, but also their cultural context and how they are used in everyday language (see also Haftner&Kuhfuß 2014, 217-219). The connection between language and movement is crucial. The performer must first think about how to present the possibly unknown proverb in a creative and understandable way. Signal words or key elements of the proverb are used to convey the meaning through gestures and body language. This promotes not only the understanding of the language, but also the creativity and expressiveness of the participants. All in all, this pantomime activity is an entertaining and engaging way to learn and deepen the German language and its peculiarities in a playful way.

From a theoretical point of view, this activity also focuses on holistic learning and offers the opportunity to gain new experiences, especially with regard to non-verbal communication. In an open teaching situation, the teacher provides stimuli while the participants practise language skills in direct contact with their group members. At the heart of the unit is play as a form of rehearsal. Through group work in which pantomime is used, the participants can apply the language they have just learnt. Mistakes are seen as a natural and valuable part of the learning process and are explicitly allowed. This method promotes a relaxed and supportive learning environment. Vocabulary work is also an essential aspect of the class. Students are encouraged to find appropriate phrases in conversation with their group members and to use words they have already learnt. This helps to improve language skills and enables a deeper engagement with the language.

The exercise takes place in an open space that provides a ‘stage’ for the performer and chairs for the ‘audience’. This arrangement supports clear role allocation and creates an environment that actively involves both performers

and observers. The lesson lasts approximately 20 minutes. This length of time allows for an intense but well-structured experience that does not overwhelm the participants but keeps them motivated and engaged. Overall, this lesson provides a creative and interactive method of developing language, non-verbal communication and teamwork.

In practical terms, the teacher plays a key role in the preparation and implementation of the exercise. He or she prepares flashcards or similar with a selection of proverbs and idioms of varying levels of difficulty according to the group's language level, a method that allows for individual differentiation. At the beginning of the exercise, the teacher explains the task to the group: one by one, the participants draw a card and pantomime the proverb or idiom written on it. After this introduction, the teacher steps back and leaves the stage to the participants to show their creativity and ability to interpret. The exercise can be given a special touch by adding sounds to the pantomime. This gives the participants the opportunity to use not only their physical expression but also their vocal creativity to convey the meaning of the proverbs and sayings.

Overall, the German proverbs and idioms pantomime activity not only promotes understanding and use of the German language, but also non-verbal communication and teamwork. Participants learn to express themselves creatively while expanding their vocabulary in a fun and interactive way.

#### **4.4. Still image exercise 'Snow White in Still Images'**

In the creative still image exercise 'Snow White in Still Images', groups of 4-5 participants are formed and the group constellations are changed regularly. The aim of the exercise is to read an extract from the fairy tale 'Snow White' and to develop still images for certain paragraphs. These should then be presented to another group, who have to guess which story or fairy tale it is.

The exercise starts with discussing and defining the different paragraphs of the text. Here it is important that the participants recognise and understand the essential elements of the story. This phase promotes the learners' understanding of the text and their ability to analyse. The next step is to try out and suggest the individual still images. Each group member contributes his ideas and works together to realise them. This part of the exercise trains not only creativity and teamwork, but also the ability to express oneself non-verbally. The final product is a coherent sequence of individual still images that together tell the story of 'Snow White'. This presentation requires good coordination and harmonisation within the group in order to achieve a common and coherent result.

This exercise is particularly suitable for advanced language learners as it requires a deep understanding of the text and creative realisation. It offers an exciting and interactive way to develop language skills, teamwork and creative expression.

From a theoretical point of view, the exercise 'Snow White in Still Images' offers a comprehensive learning experience based on the principle of holistic learning. In this open lesson situation, the teacher provides impulses that stimulate language practice in contact with the group participants. The participants are introduced to the world of the fairy tale 'Snow White' and gain new experiences by acting out important scenes of the fairy tale non-verbally in still images. The exercise includes group work that allows the language learnt to be used in a playful way. Mistakes are allowed and even encouraged, as they are part of the learning process. While working on the still images, the participants develop their ability to find appropriate phrases in conversation with the group members and to use words they have already learnt.

The space for this activity is designed to be open to allow creative freedom. There is seating for the group, possibly with a table for storing writing utensils. Furniture can be placed at the sides of the room in case it is needed to create the still images. Chairs for the 'audience' are also available so that other participants can watch the presentations. The elaboration phase of the still images takes about 20 minutes, during which the participants develop and practise their ideas. The presentation itself lasts about 5-10 minutes. This structure allows for an intensive but well-paced experience in which participants can develop their linguistic, creative and collaborative skills in a supportive and interactive environment (see, for example, Bonnet & Küppers 2011, 48-49).

In practical terms, the teacher starts by giving the participants an extract from the fairy tale 'Snow White' on a worksheet with a precise and accurate task. In addition, the teacher explains the task verbally to ensure that all participants understand the instructions clearly. The core activity is for each group to create a sequence of still images depicting specific moments or scenes from the fairy tale. These still images are then presented to the other group. These presentations are not only performances, but also interactive and reflective experiences. During the presentation, the audience has the opportunity to tap one of the performers at any time and ask them about their emotional state or other aspects of their performance. This interaction allows for a deeper understanding of the scenes presented and encourages empathy and understanding on the part of the audience. The teacher also plays an active role at this stage. He can stop the sequence of still images at any time and asks a spectator to express their thoughts and feelings about the scene being shown. This encourages reflection and critical thinking of the

participants. After a successful run through the sequence of still images, there is an additional challenge.

The team starts again, but this time the teacher or a member of the audience can stop the sequence at any point. The audience then has to perform the sequence spontaneously in groups according to their own wishes. This spontaneous activity encourages the creativity and adaptability of the participants and offers a new perspective on the story.

Overall, the ‘Snow White in Still Images’ exercise provides a rich and multi-layered learning experience that promotes both an understanding of literary content and the ability to communicate non-verbally and reflect on emotional states.

## 5. Conclusion and outlook

The use of drama pedagogy in German as a foreign language lessons, illustrated in this article by the warm-up exercises ‘Mechanical Engineering’, ‘Counting and Walking’ and the exercises ‘Pantomime on German proverbs and idioms’ and ‘Snow White in Still Images’, shows promising approaches for effective and holistic language learning. These methods combine cognitive, emotional and physical aspects of learning to create a rich, interactive learning experience. Specifically, the following five benefits of using drama pedagogy in teaching German as a foreign language can be identified:

***Promoting language competence and communicative flexibility:*** Drama pedagogy integrates language use in creative and social contexts, which encourages learners to use language actively and realistically. Through playful approaches, vocabulary and structures are applied and consolidated in a relaxed atmosphere. This methodology enables learners to break down language barriers and develop their language skills in a stress-free environment, increasing flexibility in communication.

***Non-verbal communication and expression:*** Drama pedagogical activities such as pantomime and stills from ‘Snow White’ extend communication skills beyond the verbal level. They promote an understanding of the non-verbal aspects of language and help learners to explore ways of expressing themselves beyond words. This contributes to holistic language competence by increasing sensitivity to body language and gestures.

***Holistic learning:*** The combination of movement, language and creativity, as in the ‘Counting and Walking’ exercise, activates multiple learning channels. This holistic approach promotes deeper understanding and improved retention of language content. Learners benefit from an integrated approach that appeals to different learning styles and enables a comprehensive engagement with the language.

***Strengthening of teamwork and social skills:*** Group exercises such as ‘Mechanical Engineering’ promote group cohesion and cooperation. Working together on a task strengthens not only language skills but also social and intercultural skills. Learners develop an understanding of team dynamics and learn to communicate effectively in a multicultural environment.

***Emotional involvement and increased motivation:*** The drama method of language teaching emphasises emotional involvement through role-playing and dramatic performances. Participants experience the language in emotionally charged contexts, which enhances motivation and emotional learning. This approach increases engagement and willingness to learn, especially among learners who may be inhibited in conventional classes.

For the future of German language teaching, these findings lead to the following five development opportunities and desiderata with regard to the use of drama pedagogy in the context of German as a foreign language lessons:

***Further integration of drama pedagogical methods:*** In view of the positive response and proven effectiveness of drama pedagogical approaches, further integration into regular language teaching seems both sensible and necessary. Such methods enrich the classroom through their interactive and creative nature, which increases learner motivation and engagement. Systematic integration of these approaches into language teaching could therefore make a significant contribution to improving language competence and the learning experience.

***Individualisation and differentiation:*** Drama pedagogical approaches are characterised by their ability to adapt to different levels of difficulty and thematic interests, making them a valuable tool for individualising language teaching. Through targeted adaptation, teachers can tailor the learning content to the specific level and interests of the learners. This flexibility allows for a more inclusive and effective learning process that recognises and promotes learners’ individual needs and abilities.

***Developing intercultural skills:*** In the globalised world, the development of intercultural competence in language teaching is essential. Drama pedagogy, applied in the context of learning German, makes it possible to gain a deeper understanding of the culture of the target country by staging and empathising with cultural contexts and perspectives. This method enriches language teaching by deepening cultural understanding and promotes the ability to recognise and respect cultural differences.

***Teacher training:*** The effective use of drama in language teaching requires specially trained teachers. It is therefore essential that teacher training be expanded to include drama pedagogy components.

Teachers should be specifically trained in these techniques in order to be able to use them effectively in the classroom. The training should include practical and theoretical aspects of drama pedagogy to prepare teachers for the many possible applications of these methods.

***Research and evaluation:*** In order to validate the effectiveness of drama approaches in the foreign language classroom, sound research and evaluation is essential. Long-term studies of the impact on language skills are needed to determine the effectiveness and areas of application of these methods. Such research can help to develop the methodology and optimise its applicability in different learning contexts.

In summary, it can be said that the above-mentioned drama pedagogical approaches to teaching German as a foreign language offer an innovative, holistic and effective way of promoting language learning: The language is experienced, lived and embodied. This means that drama pedagogy in the teaching of German as a foreign language can generally contribute to increasing motivation, deepening language acquisition and expanding learners' communicative skills in a creative and cooperative environment.

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# Chapter 3

## **UNDERSTANDING SPEAKING SKILLS IN ENGLISH FROM THE PERSPECTIVE OF SELF-REGULATED MOTIVATION**

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## Introduction

Regulation of learning and motivation have aroused the attention of researchers from a wide range of disciplines such as education, psychology, and sociology to name a few as self-regulated learning is thought to be concerned with “the strategies that students use to regulate their cognition (i.e., use of various cognitive and metacognitive strategies) as well as the use of resource management strategies that students use to control their learning” (Pintrich, 1999, p.459). Accordingly, successful learners of a foreign language are distinguished by speaking the language fluently and employing various strategies accurately (Bounab & Kahlat, 2022; Rahman & Deviyanti, 2012). However, improving speaking skills in English as a Foreign Language (EFL) contexts is likely to be more challenging than in the second language and/or native language contexts resulting from the following reasons: (a) learners learn English only as a school subject, (b) learners do not use English to communicate out of the classroom, and (c) learners lack opportunities to practise English (Suban, 2021); (d) the class materials and courses are inconsistent and do not allow to experience situations for real practice (Derakhshan et al., 2016). From a parallel viewpoint, Uzatosun (2020) describes speaking as one of the most arduous issues in English language teaching owing to the lack of learners’ exposure to spoken English outside the classroom, which limits learners’ practice opportunities to classroom activities. For this reason, EFL learners, especially in input-poor environments, confront obstacles in improving their oral communication skills and rely more on their self-regulated motivational (SRM) skills to master speaking (Uzatosun, 2020). As a result, the main purpose of the current paper is to explore the extent to which university students’ self-regulated motivation level helps improve their speaking ability.

Within the scope of the current research, two main research questions are formulated:

R.Q.1. What are the ways university preparatory class EFL learners in Turkey use to improve their English-speaking ability?

R.Q.2. What do the university preparatory class EFL learners in Turkey feel while speaking English?

## Literature Review

### Self-Regulated Motivation and Speaking

In human communication, speaking is a crucial skill to ensure interaction with others both in the native language and in the second or foreign language. In today’s interconnected global society, being able to communicate across linguistic boundaries is increasingly vital. Particularly, speaking in a foreign/second language can be defined as a dynamic process and it goes beyond

the mere exchange of information; rather it is a vehicle to express thoughts, emotions, and perspectives.

English – within our area of interest in this study – is a language that is taught/learned at all levels of schools and widely spoken all around the world. However, teaching/learning English in countries in which it is not commonly spoken in everyday communication, particularly in countries where it is not the official language, can be quite challenging (Nursafira, 2020). The challenges do not only include linguistic issues but also cultural and individual nuances, all of which might have an impact on learners' ability to participate in meaningful oral communication. In other words, coping with and eliminating the adverse effects of these challenges requires a comprehensive understanding of the sociocultural context, language setting as well as the individual characteristics of learners.

In terms of individual characteristics, speaking skill requires learners' proficiency in utilizing proper and suitable practical and communication strategies, providing an apt response to the content, articulating questions or comments accurately, and using culturally appropriate negotiation techniques that enhance conversation (Winke, 2013). Learners who go through strategic, metacognitive processes are likely to cope with the complexities of oral communication more effectively and enhance their ability to express themselves fluently and coherently. In this sense, what is crucial to note here is that both cognitive and metacognitive strategies play a pivotal role in promoting speaking which has something to do with SRM.

To portray a more comprehensive perspective for SRM, it can be defined as “the activities through which individuals purposefully act to initiate, maintain, or supplement their willingness to start, to provide work toward, or to complete a particular activity or goal” (Wolters, 2003, p. 190). In addition to Wolter's framework, numerous theoretical models have focused on categorizing those strategies under various domains and related skills (for more information, see Panadero, 2017). Nonetheless, other models attempted to incorporate both motivational orientations and cognitive components of SRL, leading to self-regulated motivation (Garcia & Pintrich, 1994; Pintrich, 1994; Wolters, 2003). From these motivational aspects, it might be stated that SRM is strengthened through strategies mostly connected to goal setting, expectations, and values in order to manage and sustain motivation (Paulino et al., 2016).

Accordingly, as a productive skill, speaking is directly affected by learners' SRM, which is regarded as the driving power behind learners' progress towards competently speaking in the target language (Uztosun, 2021). The relation, stated by Uztosun (2021), between SRM and speaking proficiency highlights how motivational factors play a crucial role in shaping

language acquisition. Learners' innate desire to learn, and their engagement in learning as well as the rewards/punishments coming from external sources all determine learners' success. SRM refers to learners' ability to control their motivation by regulating their behaviours. When SRM is contextualized in oral communication, it refers to learners' regulation of their engagement in speaking activities with the aim of speaking the foreign language fluently and accurately. Within this sense, it can be stated that SRM is not a passive force; but it involves learners' active regulation and strategic decision-making abilities. Learners, in this context, are not passive participants, but they are required to navigate the complex task of speaking proficiently in a foreign language.

### **Previous Research**

As the findings of previous studies demonstrate, motivation offers noteworthy benefits to effective language learning. These benefits have been investigated in academic achievement (Manganelli et. al, 2019), in general and in speaking English (Kumalasari, 2022; Salsabila & Maharsi, 2023; Uztosun, 2021), in particular. To exemplify, Salsabila and Maharsi's study (2023) aims to determine the SRM levels of college students when speaking English, as well as the differences between males and females. 92 English Language Department students from a private university in Yogyakarta took part in their study where the SRMIS-EFL questionnaire was used to obtain the data. According to descriptive and independent t-test results, it was revealed that the participants had a high SRM level in a general sense with no specific difference between male and female students. Remarkably, the findings showed that task value had the highest value compared to other subdomains in the questionnaire to name regulation of classroom, regulation of learning, and regulation of affect.

In another study, Kumalasari (2022) carried out her thesis study to identify the variables that have the greatest impact on Indonesian college students' self-regulated motivation in speaking English. To fulfill this purpose, the researcher used Uztosun's scale (2020) in which he measured Self-Regulated Motivation in Speaking (SRMIS) for EFL learners identifying four subdomains as already mentioned above. The participants in the study were 130 university students majoring in the English Language Education Department at a private university in Indonesia. The survey results uncovered that task value activation and regulation of affect had the most influential impact on learners' speaking English proficiency.

Considering motivational orientations, Aysu carried out her study (2018) with 199 students in a selective preparatory class at a Turkish state university and administered a questionnaire to reveal the type of motivation which affects their English language learning. Results showed that they

have high instrumental motivation to learn English at the beginning of the fall term rather than integrative motivation although they study English in preparatory classes voluntarily (Aysu, 2018). Similarly, in the study by Nguyen (2019), 371 first and second-year students studying at Vietnam National University responded to a questionnaire and they were also motivated to learn English instrumentally. In a qualitative study with 12 Malaysian secondary school students, it was revealed that they are all motivated to learn English instrumentally (Hong & Ganapathy, 2017).

### **Methodology**

This section includes contextual information including setting and participants, research design, instruments, data collection, and analysis procedures. Designed as qualitative research, this study questions students' opinions about their English-speaking ability and emotions while speaking English with an attempt to reach a deeper understanding of the issues under investigation here. Within a qualitative research design, the focus is not only on the actions being observed, but also on how the participants interpret these actions and how these interpretations affect their behaviours (Maxwell, 2008).

### **Setting and Participants**

The participants of this study were selected on the basis of convenience sampling (Creswell, 2012; Davis, 2015). So, 90 students (55 females and 35 males, aged between 18-20) who were studying English in a selective preparatory program at a state university on the northwestern coast of Turkey took part in this study. This academic year is called a "preparatory class", which might be selective or compulsory. Students in selective preparatory classes register on a voluntary basis in their first year at university, and this means students from various majors across the university might get English language education for professional or personal aims, but do not need English as a requirement in their departments. On the other hand, in the compulsory preparatory classes, students need to complete the preparatory class successfully before they are allowed to continue to their departments because a certified level of the target language is a prerequisite in their department. The participants of the present study are registered for one academic year-long selective English language education, and they are students of various faculties and vocational schools at the university.

### **Data Collection Instrument and Data Analysis**

Qualitative data collected utilizing two structured interview questions developed by the researchers were also used as research questions in the study. The gathered data were analysed through content analysis (Creswell, 2013). As a first step, the obtained data were organized and prepared for analysis. Secondly, reading the data several times helped to find out any recurring

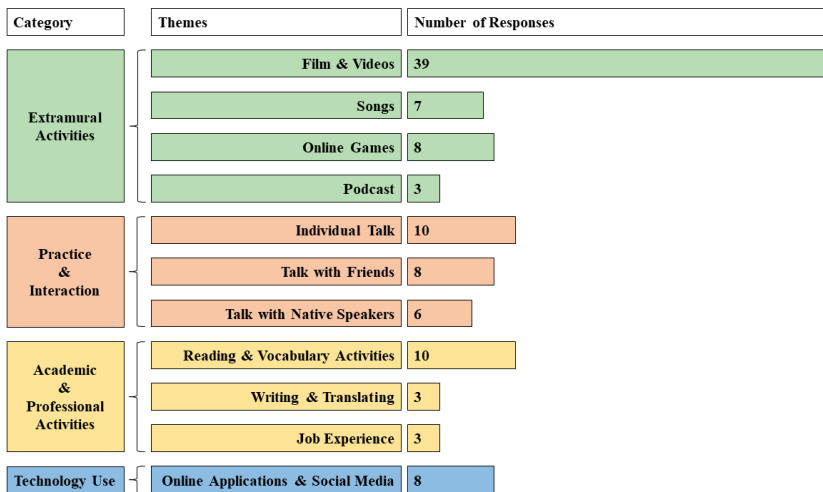
phrases, thoughts, and ideas. Next, the first coder categorized those ideas and phrases and wrote them as themes in accordance with the interview questions (Creswell & Poth, 2018). Then, another coder analysed the data and revealed the codes and themes. Thirdly, inter-coder reliability was calculated as 80.09 %. The number of agreements of coders was 173 while the number of disagreements was 43 based on the formula of Miles and Huberman (1994), thus accepted as reliable as it is more than 80%. Finally, the common emergent themes were presented.

## Findings

In order to identify to what extent students' self-regulated motivation level helps to improve their speaking ability, the following research questions were answered. In response to the first research question about learners' ways to improve their English-speaking abilities, the common emergent themes were demonstrated below in Figure 1.

**Figure 1**

*Main Ways for Improving English Speaking*



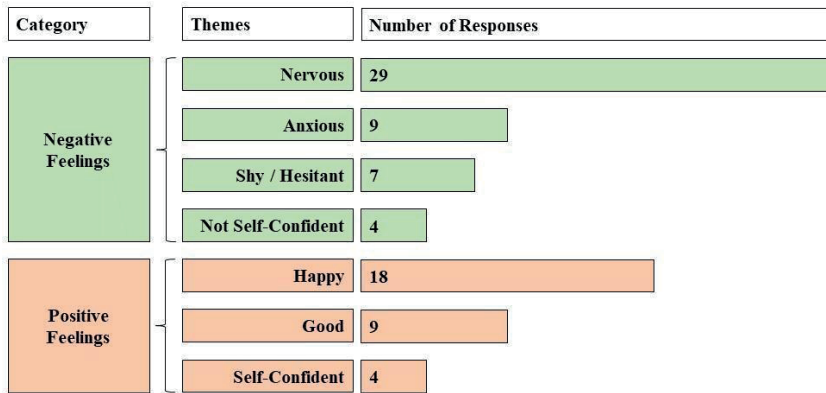
As can be seen, the main categories identified in this question with regard to the main ways for improving English speaking were named as follows: extramural activities, practice & interaction, academic & professional activities, and technology use. When the data are scrutinised closely, the highest number belongs to the first category as “extramural activities” reported by 57 participants. Considering the mostly mentioned themes under this category summarised above, “films-videos” (N=39), “songs” (N=7), “online games” (N=8), and “podcast” (N=3) were addressed by the participants. The second category regarded as one of the ways for improving English speaking by the participants was “practice & interaction”. The key themes identified under this category were found as follows: “individual talk” (N=10), “talk

with friends” (N=8), and “talk with native speakers” (N=6). Considering participants’ ways for improving their speaking in English, the third category addressed “academic & professional activities”. In this category, participants self-reported three major themes as “reading and vocabulary activities” (N=10) and “writing and translating activities” (N=3) and “job experience” (N=3). The next category for this research question showed that participants used “technology use” so as to improve their speaking abilities. The only theme named under this category was “online applications/social media” reported by only 8 participants.

The aim of the second research question was to reveal the perceptions of students with regard to their feelings about speaking English. The key results are displayed and categorised as negative and positive feelings in Figure 2 below.

**Figure 2**

*Participant Students’ Feelings about Speaking English*



When Figure 2 was closely analysed, the gathered data indicated that the participants, in general sense, had negative feelings about speaking English (N=49). Considering the negative feelings mentioned by the majority of the respondents, the most frequently-stated negative feelings were “nervous” (N=29) and “anxious” (N=9). Other key themes identified in this question were named as “shy & hesitant” (N=7) and “not self-confident” (N=4). Concerned with positive feelings, the general tendency of respondents was found to address “happy”, “good”, and “self-confident” in relation to their feelings about speaking English. 31 EFL learners in the study reported positive feelings about speaking in English. The most frequently mentioned positive feeling was “happy” by 18 informants while the least one was found as “self-confident” self-stated by only 4 participants.

### Discussion and Conclusion

The findings of this study shed light on the diverse strategies employed by learners to enhance their English-speaking proficiency. In general, the use

of extramural activities was found as a notable preference for learning beyond the traditional classroom setting. This shows that they are more motivated by the use of English outside the classroom. In particular, findings, in terms of extramural activities, showed that students preferred to watch films/videos, listen to songs/podcasts, and play online games to improve their English-speaking ability. This tendency to utilize extramural activities supports the general notion that being exposed to a foreign language in real-life contexts contributes significantly to language acquisition.

This can be explained by the fact that out-of-class activities (watching films, videos, listening to songs, playing games) might create a motivating atmosphere for students as they could eliminate fear and anxiety. This finding corroborates with the study of Uztosun and Kök (2023) which established a causal link between extramural English (EE) and factors like L2 anxiety and communication apprehension.

Additionally, this result shows how important EE is in fostering happy emotional states, which are known to have an impact on L2 learning. Based on this finding, the fun and game-like nature of extramural activities draws English language learning to the ground of game-based learning which brings English learning closer to daily life, thus creating both an out-of-class activity and an atmosphere that reduces negative emotions (Pia, 2009). This is also approved by the interview questions in this study since most of the students had negative feelings ( $n=49$ ) while they are speaking English. It can be inferred that this utilization of extramural activities not only serves as an extension of learning outside the class but also serves as a mechanism to decrease the effect of negative emotions related to speaking English. As the present research showed, the most frequently stated feelings were “nervous” (%32) and “anxious” (%10). In this sense, extramural English in general sense, video games and speaking-related EE activities in particular have a significant potential to decrease L2 anxiety and communication apprehension (CA) by creating a more naturalistic and authentic learning environment (Uztosun & Kök, 2023).

Furthermore, learners’ responses showed that a significant number of participants expressed negative feelings such as nervousness, anxiety, and shyness while speaking English, and this stresses the need for researchers, educational experts, and teachers to focus on foreign language-speaking anxiety. The expression of such feelings emphasizes the importance of mechanisms/approaches aiming to reduce these negative emotions when learning a foreign language. Within this sense, it can be stated that extramural activities are likely to bring out a solution to eliminate negative feelings and promote positive feelings such as happiness and self-confidence by creating a more authentic learning environment.



On the other hand, only a minority of learners stated that they used online applications and social media to improve their English-speaking skills. The limited utilization of online applications and social media platforms might be the result of several factors. One possible explanation is the presence of inequality in access to technology. The socioeconomic and educational backgrounds of learners might lead to the stated inequality as the participants are not homogeneous in this sense; their high school background, family structure, fields of study, prior exposure to English, etc. all influence how they are able to adapt to technology use for educational goals.

This inequality also affects learners' digital literacy skills, which in turn leads to an inequality in engagement with online learning tools. This situation can be described as a vicious circle where learners do not equally access online tools and are not accustomed to using online tools for learning or where they do not have access to technological tools even though they are willing to use them for learning goals.

Another factor affecting learners' use of online tools/applications to improve their English-speaking skills might be related to the educational settings they experienced at the high school level. The existence of an exam-focused environment is likely to prevent teachers/students of from integrating technology into English classes at high school. The exam-focused environment at high school prioritizes traditional teaching methods over technology integration, and in such a setting, exam outcomes and standardized assessments are on the stage, which in turn deters teachers and students from exploring online learning tools/applications. In other words, this phenomenon leads teachers/students to be less inclined to incorporate online resources into their English teaching/learning processes.

When it comes to the utilization of social media to improve speaking, the nature and underlying concept of social media platforms might be a deterrent factor mainly due to their predominant focus on written communication in the form of posts, comments, and messages. This could create a mismatch between the communicative demands of learners to speak English and the nature of social media platforms. It can be inferred that learners perceive social media as a space for written communication and does not provide adequate opportunities for spoken communication. Consequently, this perception is likely to discourage learners from actively utilizing social media platforms to improve their oral proficiency in English.

### **Implications and Suggestions**

The findings of the current study revealed the positive impact of extramural activities on the improvement of English-speaking skills. As the study is limited to a particular number of participants, it is not possible to generalize the results. For this reason, future research could investigate the

specific extramural activities and explore their impact on language learning processes and productive/ receptive skills with a larger participant group. Also, future research could investigate the impact of extramural activities on achievement, engagement and emotional states during the language learning processes. In practice, extramural activities such as watching films, listening to songs, and playing online games could be involved in language classrooms.

Another significant implication addresses language anxiety as the findings of the study highlights the existence of anxiety in English-speaking proficiency. Future research could investigate how SRM influences learners' attitudes and behaviours when speaking English and how SRM strategies could be utilized to manage anxiety. In practice, teachers could seek strategies to reduce English-speaking anxiety by creating an inclusive classroom atmosphere.

Finally, further research could study how to integrate technology seamlessly into language education systems. A research study with a larger and nationwide participant group could provide a deeper insight into the effect of technology on language learning/teaching. In practice, teachers could seek ways to incorporate online language learning tools into the classroom and provide guidance on digital literacy skills for all students.

To conclude, as the current study also demonstrated, input-poor environments should be enriched by extramural activities which might create an atmosphere for foreign language learners by decreasing their anxiety levels. The suggestions stated above could help researchers/teachers create a more dynamic and inclusive language learning environment and help improve students' English-speaking skills.

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# Chapter 4

## **EDUCATIONAL APPROACHES OF PRESCHOOL TEACHERS: INVESTIGATION OF EDUCATIONAL ACTIVITIES WITHIN THE FRAMEWORK OF CHILD-CENTERED APPROACH**

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## Introduction

Although the necessity of pre-school education is well known today, it is now accepted by the whole world that it is not enough to provide pre-school education services to children and that it should not be. It is of great importance that preschool education services are of high quality, and for this purpose, educational philosophy and goals, curriculum, values and expectations of families and society, expert teachers and staff, educational environments, and program evaluation studies should be carefully structured. This is because all these elements interact with each other and the traces of a principle or approach adopted in one of them will definitely appear in the other elements. For example, in an education program prepared according to the objectivist view, which accepts learning as the acquisition of the information transferred to students as it is, and which includes behaviorist and cognitive theory, teaching usually takes place in a teacher-centered process (Jonassen, 1991). In an educational approach where such an approach is adopted, knowledge and skills are designed in such a way that they can be fully transferred to students. Therefore, since the best person to do this job is the teacher, the learning process consists entirely of activities structured by the teacher. Here, learning is tried to be facilitated by predetermining and separating the mental activities and sequence that the student needs to do in order to accomplish the learning task (Jonassen, 1991). The student becomes a passive individual who tries to take what is presented to him/her. In such a teaching process, evaluation is also criterion-based, separate from teaching and measuring the knowledge acquired by the student.

On the other hand, in a flexible preschool education program that is based on the needs of children and consists of experiences planned within the framework of developing children's abilities, children are in a more active position (Jalongo, Fennimore, Pattnaik, Laverick, Brewster & Mutuku, 2004). In a quality preschool education program developed with a child-centered approach, children's senses should be taken into account in learning experiences and these experiences should be carried out in a way that respects children's spontaneity and enables them to learn through play (Jalongo et al., 2004). Child-centered programs enable the teacher to participate in education as a good leader, a resource to be consulted and a guide. In such an approach, the teacher's biggest task is to create an educational atmosphere that will foster children's development and to encourage and motivate them for further learning (Hendrick, 1980). When preparing a daily plan, the teacher should be very careful to identify the activities that will best meet their goals and should choose to plan with the children to create materials, activities and projects and to reorganize the classroom environment (Wortham, 1998).

On the other hand, it would be appropriate to mention the constructivist approach, which advocates a child-centered approach and has deeply influenced educational studies in the last two decades. The constructivist

approach, which has shown its applicability in preschool education, has a different philosophical view of what knowledge is (De Vries, Zan, Hildebrandt, Edmiaston & Sales, 2002). The constructivist view (constructivism) is a theory of knowledge with philosophical and psychological foundations and advocates two basic principles: 1. According to it, knowledge is not acquired passively but is actively constructed or structured in the mind. 2. The cognition or perception function of the mind is to serve the organization of the experiential world, not to discover the reality of existence (Glaserfeld, 1989). In other words, as the objectivist view argues, knowledge cannot exist in the external world independently of the individual and cannot be transferred to minds from the outside, but rather is constructed in the mind by the individual. Piaget's theory was utilized to explain the constructivist understanding of preschool education, which advocates the provision of learning experiences appropriate to children's age and developmental levels that will allow them to create their own learning (Edwards, 2005).

The constructivist approach to preschool education emphasizes that children can actively make sense of and interpret their own experiences in their physical and social worlds and thus construct their own knowledge, understanding and morality (DeVries et al., 2002). DeVries and Zan (1994) summarize the best way to support young children in constructing knowledge as engaging them in their interests, drawing them into active experiences despite the possibility of making mistakes, and encouraging them to collaborate with adults and other children.

In the constructivist education approach, the student takes responsibility for learning and the teacher plays a facilitating role. More precisely, the teacher is not a person who directly transfers knowledge to children, but a person who guides children to construct knowledge (Glaserfeld, 1989; 2004). There is a misconception that the teacher's role in constructivist education is that of a simple observer who passively watches children construct knowledge. It is emphasized that teachers who are accustomed to teaching by directing, explaining and talking about children's work should develop an understanding in constructivist teaching that acknowledges that children, not themselves, construct learning. Within the framework of this understanding, teachers assume very important roles such as creating an atmosphere in the classroom for the development of fully interpersonal relationships, observing children's interests, consulting their ideas about what they want to learn, providing a variety of opportunities to allow them to make choices, and enabling children to focus on creating big ideas in which they can engage deeply with their own work in an environment that includes activities and materials appropriate to their developmental level (DeVries et al., 2002). In constructivist teaching, the teacher's function is neither to implement a planned activity step by step with the children, nor to leave the children completely free in a designed activity

and let them work as they wish without any intervention. In this approach, the role of the teacher is to both guide and provide opportunities for children to explore freely. By using observation and questioning techniques and working interactively with children, the teacher should consider adapting instruction to their level of interest and understanding and create a collaborative social and thought-provoking atmosphere in which children can construct their own knowledge (DeVries et al., 2002).

Teachers play the biggest role in the reflection of learning theories, which explain how learning takes place in individuals, on educational programs and the teaching-learning process. As a matter of fact, the implementation of an educational program by taking into account its philosophy, principles, objectives and characteristics will provide more accurate results about the effectiveness and efficiency of that program. Therefore, a developed curriculum can be implemented effectively if its theory, educational approach, principles and features are understood and adopted by teachers who are the implementers of the curriculum. This can only be possible with teachers who are open to development and innovation and have strong content knowledge. For this reason, it was deemed important to investigate the compatibility between the educational approaches adopted by teachers and the approach of the education program they implement.

In this study, it was aimed to determine the educational approaches of preschool education teachers and in line with this aim, the following questions were sought to be answered.

1. What are the views of preschool teachers on the monthly and daily education plan formats in the 2013 Preschool Education Program?

2. What are the opinions of teachers about their utilization of the 2013 Preschool Education Activity Book in planning the teaching-learning process? Do these opinions show a significant difference according to graduation status and seniority?

3. What are teachers' views on the methods and techniques used in planning and implementing the teaching-learning process?

4. What are teachers' views on the use of materials and activities supporting activities in planning and implementing the teaching-learning process?

In daily plans prepared and implemented by preschool teachers;

5. How were Turkish, science, mathematics, music, art, concept education and literacy preparation activities structured and within which approach?

6. What are the methods and techniques included?



In the study, the 2013 Preschool Education Program of the Ministry of National Education was taken as the basis for determining the educational approaches of teachers in line with the above-mentioned objectives. This program was prepared as a result of program development studies carried out in line with the contributions of all stakeholder institutions and organizations providing preschool education within the scope of the Strengthening Preschool Education Project. This program was developed with the aim of ensuring that children attending preschool education institutions grow up healthy by providing rich learning experiences, reach the highest level by supporting all areas of development, acquire self-care skills and prepare for basic education (MEB, 2013). While analyzing the educational approaches of preschool teachers, the approaches and features of the MNE 2013 Preschool Education Program were taken into consideration and it was tried to determine whether there was consistency between the program and the teachers.

## **Method**

### ***Research model***

Quantitative and qualitative research techniques were used together in this study, which aims to determine the educational approaches that preschool teachers adopt and use in their activity practices and evaluations and to examine the suitability of these approaches to child-centered understanding. In the quantitative dimension of the research, the survey model was used and preschool teachers' views on planning and implementing education and training were tried to be determined with the help of a questionnaire. In survey models, the event, individual or object that is the subject of the research is tried to be defined in its own conditions and as it is, and there is no effort to change or affect them in any way (Karasar, 2002). In the second dimension of the study, it was aimed to determine how the teachers made the planning within the framework of the basic understanding of the 2013 Preschool Education Program (child-centered approach) and what kind of activities they included, and for this reason, the daily plans prepared and implemented by the teachers were examined with the document analysis technique, which is one of the qualitative research techniques. Document analysis involves the analysis of written materials that contain information about the phenomena and events targeted to be researched, and when used with other data collection methods, it serves the purpose of diversifying the data and significantly increases the validity of the research (Yıldırım & Şimşek, 2005).

Through both taking teachers' opinions and examining their plans, it was tried to determine the educational approaches they adopted or tended to adopt by analyzing the selection of activities, planning of activities, selection and use of methods-techniques, tools and equipment, and these determinations were tried to be evaluated within the framework of the child-centered approach, which is the general approach of the 2013 Preschool Education Program.

### ***Research Group***

The research group consisted of preschool teachers working in public and private kindergartens and pre-school classes affiliated to the Ministry of National Education in Bolu city center. In Bolu city center, a total of 50 institutions, 39 primary schools (pre-school classes) and 11 independent kindergartens, provide preschool education services. Among these institutions, 65 preschool teachers working in 30 schools selected on the basis of easy accessibility constituted the research group. In the first part of the study, which aimed to obtain teachers' opinions, the questionnaire was applied to all teachers included in the research group (N=65), but 51 teachers returned the questionnaire completely and accurately.

In the second part of the study, which involved examining the daily plans of preschool teachers, 25 schools were randomly selected from among the kindergartens and pre-school classes affiliated to the Ministry of National Education in Bolu city center, and 25 daily plans belonging to the 6-year-old age group, one from each school, were examined.

### ***Data Collection Tools and Implementation***

The opinions of preschool teachers about their work in planning and implementing education were obtained by using a semi-structured questionnaire form consisting of 10 questions and prepared by taking expert opinion. The questionnaire form was applied to 51 preschool teachers working in Bolu center by the researcher.

As a second data collection tool in the study, the daily plans implemented by the teachers during the 2022-2023 academic year were used. The 25 daily plans, which were selected anonymously, were analyzed with the document analysis technique within the scope of the types of activities, the content of the activities, the instructions given to the children, and the methods and techniques used.

### ***Data Analysis***

The data obtained with the semi-structured questionnaire form were analyzed using the SPSS program. In the analysis of the structured questions in the questionnaire form, frequencies and percentages were used and whether the answers differed according to educational status and professional seniority was analyzed using Chi-Square and Fisher's Exact Probability Test. For open-ended questions, only frequency and percentage were used.

In the analysis of teachers' daily plans, the document analysis technique, which is frequently used in qualitative research, was used. Analyses were made based on the categories created in accordance with the objectives of the research and these analyses were interpreted by quantifying them where necessary.

## Findings

In this section, the findings obtained in line with the aims of the study are given in two sub- sections. In the first sub-section, the findings obtained through the questionnaire form and the opinions of preschool teachers about the studies they carried out in planning and implementing education and training are given in tables; in the second sub-section, the findings related to the analysis of the daily plans prepared and implemented by the teachers with the document analysis technique are given in subheadings.

### *I. Teachers on the Process of Planning and Implementing Education Findings Related to Opinions*

When the distribution of the preschool teachers in the study group was analyzed according to the type of program they graduated from, it was found that 58.8% (N=30) were associate degree graduates and 41.2% (N=21) were bachelor's degree graduates. In the distribution of teachers according to their seniority in the profession, it was found that 33.3% (N=17) had a seniority of 1-5 years, 19.6% had a seniority of 6-10 years, and 47.1% had a seniority of 11 years or more.

When the teachers were asked whether the monthly and daily plan formats and explanations in the 2013 Preschool Education Program were sufficient when preparing monthly and daily plans, the vast majority (84.3%, N=43) stated that they found them quite sufficient and understandable. When the teachers were asked whether they benefited from the examples in the Activity Book while preparing their daily plans, no teacher stated that they did not benefit at all, but 45.1% (N=23) stated that they benefited mostly, while 54.9% (N=28) stated that they benefited occasionally. In this case, it can be said that half of the research group mostly benefited from the Activity Book and the other half occasionally benefited from the Activity Book. When the teachers who stated that they used the Activity Book occasionally were asked about the reasons for this, they stated that they benefited more from the daily plans issued by the publishing houses and the internet. The Chi-Square analysis of whether there is a significant difference between the level of utilization of the Activity Book and the graduation status and seniority of the teachers is given in Table 1.

*Table 1. Teachers’ Opinions on the Level of Utilization of Activity Book Analysis by Graduation Status and Seniority*

|                   |                          | I benefit most of the time |            | I use it occasionally | Total       | Chi-Square Test                        |
|-------------------|--------------------------|----------------------------|------------|-----------------------|-------------|--|
| Graduation Status | 2-year associate degree  | N %                        | 19<br>63.4 | 11<br>36.6            | 30<br>100.0 | Fisher Exact Test<br>Sd=1<br><br>P<.05 |
|                   | 4-year bachelor’s degree | N %                        | 4<br>19.1  | 17<br>80.9            | 21<br>100.0 |  |
|                   | Total                    | N %                        | 23<br>45.1 | 28<br>54.9            | 51<br>100.0 |  |
| Seniority         | 5 years and less         | N %                        | 9<br>52.9  | 8<br>47.1             | 17<br>100.0 | $\chi^2=0.641$<br>sd=2 P=0.726         |
|                   | 6-10 years               | N %                        | 4<br>40.0  | 6<br>60.0             | 10<br>100.0 |  |
|                   | 11 years and above       | N %                        | 10<br>41.7 | 14<br>58.3            | 24<br>100.0 |  |
|                   | Total                    | N %                        | 23<br>45.1 | 28<br>54.9            | 51<br>100.0 |  |

P<0.05

As seen in Table 1, while the level of teachers’ utilization of the Activity Book shows a significant difference according to their graduation status, it does not show a significant difference according to their professional seniority. Teachers with associate’s degree benefit from the Activity Book more than teachers with bachelor’s degree.

*Table 2. Teachers’ Views on the Way of Utilizing the Activity Book Analysis by Graduation Status and Seniority*

|                   |                          | I select activities from the Activity Book and use them exactly as they are |            | I create original activities | Total       | Chi-Square Test                 |
|-------------------|--------------------------|---|------------|------------------------------|-------------|---------------------------------|
| Graduation Status | 2-year associate degree  | N %   | 12<br>40.0 | 18<br>60.0                   | 30<br>100.0 | Fisher Exact Test Sd=1<br>P>.05 |
|                   | 4-year bachelor’s degree | N %   | 6<br>28.6  | 15<br>71.4                   | 21<br>100.0 |                                 |
|                   | Total                    | N %   | 18<br>35.3 | 33<br>64.7                   | 51<br>100.0 |                                 |
| Seniority         | 5 years and less         | N %   | 3<br>17.6  | 14<br>82.4                   | 17<br>100.0 | $\chi^2=4.71$ sd=2 P=0.095      |
|                   | 6-10 years               | N %   | 3<br>30.0  | 7<br>70.0                    | 10<br>100.0 |                                 |
|                   | 10 years and above       | N %   | 12<br>50.0 | 12<br>50.0                   | 24<br>100.0 |                                 |
|                   | Total                    | N %   | 18<br>35.3 | 33<br>64.7                   | 51<br>100.0 |                                 |

P<0.05

As seen in Table 2, the way teachers utilize the examples in the Activity Book does not show a significant difference according to their graduation status and seniority. While 1/3 (35.3%) of the teachers in the research group stated that they used the activity examples in the Activity Book by transferring them to their plans, 2/3 (64.7%) stated that they created their own activities and plans inspired by the examples in the Activity Book.

*Table 3. Teachers' Views on the Frequency of Use of Methods and Techniques*

|                       | Mostly |      | Occasionally |      | Quite a few |      | Total |       |
|-----------------------|--------|------|--------------|------|-------------|------|-------|-------|
|                       | N      | %    | N            | %    | N           | %    | N     | %     |
| Narration             | 29     | 56.9 | 9            | 17.6 | 13          | 25.5 | 51    | 100.0 |
| Question and answer   | 36     | 70.6 | 11           | 21.6 | 4           | 7.8  | 51    | 100.0 |
| Role playing          | 23     | 45.1 | 26           | 51.0 | 2           | 3.9  | 51    | 100.0 |
| Drama                 | 26     | 51.0 | 16           | 31.3 | 8           | 15.7 | 51    | 100.0 |
| Educational games     | 32     | 62.8 | 15           | 29.4 | 4           | 7.8  | 51    | 100.0 |
| Inquiry and discovery | 5      | 9.8  | 20           | 39.2 | 26          | 51.0 | 51    | 100.0 |
| Peer tutoring         | 3      | 5.9  | 14           | 27.5 | 34          | 66.6 | 51    | 100.0 |
| Project work          | 2      | 3.9  | 29           | 56.9 | 20          | 39.2 | 51    | 100.0 |
| Discussion            | -      | -    | 20           | 39.2 | 31          | 60.8 | 51    | 100.0 |
| Case study            | -      | -    | 27           | 52.9 | 24          | 47.1 | 51    | 100.0 |
| Brainstorming         | 7      | 13.7 | 11           | 21.6 | 33          | 64.7 | 51    | 100.0 |
| Problem solving       | 6      | 11.8 | 11           | 21.6 | 34          | 66.6 | 51    | 100.0 |

When Table 3, which includes teachers' opinions on the frequency of use of methods and techniques in planning and implementing education, is examined, it is seen that the methods and techniques that preschool teachers mostly use are question-answer (70.6%), educational games (62.8%), lecture (56.9%) and drama (51.0%). The role-playing technique was used mostly by almost half of the teachers (45.1%) and occasionally by the other half (51.0%). More than half of the teachers stated that they used project work (56.9%) and case study (52.9%) methods occasionally. When we look at the methods and techniques used less frequently in the table, half of the teachers stated inquiry and discovery (51.0%), more than half of the teachers stated discussion (60.8%), 2/3 of the teachers stated peer tutoring and problem solving (66.6%) and brainstorming technique (64.7%).

*Table 4.* Teachers' Opinions on Activities Supporting Educational Activities

| Activities  | N  | %    |
|---|----|------|
| Taking children to out-of-school venues (museums, exhibitions, cinemas, theaters, etc.) | 40 | 78.4 |
| Cooperation with branch teachers (art, music, foreign language, etc.)                   | 23 | 45.0 |
| Inviting guests to class  | 32 | 62.7 |
| Organize sightseeing tours  | 35 | 68.6 |
| Organizing celebrations on important days   | 40 | 78.4 |
| Taking children to primary schools  | 9  | 17.6 |

When teachers were asked what other activities they do to support and enrich activities such as games and movement, music, etc., their opinions are presented in Table 4. As can be seen in the table, the majority of teachers (78.4%) stated that they organized trips to out-of-school places such as museums, exhibitions, cinemas, theaters, etc. and celebrations on important days. Again, the majority of the teachers stated that they organized trips to the environment (68.6%) and more than half (62.7%) stated that they organized informative talks by inviting people from various professional groups to the classroom. Nearly half of the teachers (45.0%) stated that they organized additional activities with experts in the fields of painting, music, drama, etc. in line with the preferences of parents, and a very small number (17.6%) stated that they organized trips to primary schools from time to time to prepare for primary school.

*Table 5.* Support Materials Used as Supplementary to Educational Activities Teacher Opinions

| Materials                                      | N  | %    |
|--|----|------|
| Practice books for concept education           | 47 | 92.2 |
| Literacy preparation books                     | 36 | 70.6 |
| Practice books that improve math skills        | 38 | 74.5 |
| Practice books to support areas of development | 15 | 29.4 |
| Worksheets                                     | 39 | 76.4 |

When the teachers were asked what kind of materials they used other than the materials they used for the related activity while implementing the educational activities, almost all of them (92.2%) stated that they used practice books prepared for concept education such as color, number, shape, space, etc. and sold in the market, as seen in Table 5. Again, the majority of the teachers stated that they used worksheets (76.4%), practice books for developing mathematical skills (74.5%) and literacy preparation books (70.6%), which were obtained from various sources and colleagues and reproduced or prepared by themselves in accordance with the objectives and achievements of the day. A small number of teachers (29.4%) stated that they use practice

books that support various developmental areas and are sold as sets.

## ***II. Qualitative Findings Related to the Analysis of Daily Plans***

This section presents the findings obtained as a result of the analysis of 25 daily plans prepared and implemented by preschool teachers according to the five categories determined in line with the aims of the study.

Turkish, Science, Mathematics, Music, Art Activities in Daily Plans

### ***i) Turkish Language Activities***

All of the daily plans analyzed included a Turkish language activity, and when the content was analyzed, it was found that most of them included story activities (N=18). When the way the stories were worked with children was examined, it was determined that almost all of them consisted of the teacher telling a story selected by the teacher to the children or reading the story by showing pictures from the book, followed by the teacher asking questions about the story or testing whether the story was understood by acting it out. Unlike these, in two plans, it was stated that the teacher would tell the story using puppets and then the story would be reinforced with questions. In one plan, it was stated that the story would be narrated by the teacher using puppets and that children would be allowed to participate in the show by improvising during the narration. In another plan, it was stated that the teacher would ask the children to tell a story about “health” based on their own memories and come up with a name for their story, and then, based on the stories told, this topic would be covered in a discussion environment about protecting health.

In the plans that did not include story work in the Turkish language activity (N=6), the teacher asked questions about the theme or concept of the day and conducted this activity in a chat environment. The participants stated that they would carry out the activity. In the Turkish language activity of only one plan, it was stated that a video with an educational theme would be watched and then a conversation would be held about the topic. In all of the plans, poems, rhymes, riddles and finger plays related to the concepts or topics of the day were found to be very common.

### ***ii) Science-Mathematics Activities***

When the twenty-five daily plans included in the analysis were analyzed in terms of science and mathematics activities, it was seen that only seven plans included science activities. Except for one plan, science activities consisted of science experiments. These experiments were usually conducted by the teacher by explaining and then the children did the experiments.

*“A day-night experiment is conducted using a flashlight and a globe. Children are given the opportunity to do the experiment one by one.”*

*“The teacher tells the children to watch him/her carefully and puts two*

*vases, two white carnations, water, red and blue powder paint on the table. First she fills the vases with water. He puts blue and red powdered paint in one and mixes them. She asks the children the difference between the two vases. A carnation is placed in both vases. It is placed in a place in the classroom where children can observe it.”*

A different science activity was that a mother with a baby was invited to the classroom and the children tried to form concepts of growth and development through their own observations by comparing the baby with themselves, the mother, the teacher and asking various questions. It was found that the mathematics activities in the daily plans analyzed were mostly given together with a play activity in an arrangement prepared by the teacher, and only five plans included a mathematics activity under a separate title. The mathematics education given under the name of an active play activity is generally as in the example below.

*“The teacher arranges the umbrellas he/she has drawn beforehand at certain intervals from big to small.*

*First the teacher and then the children jump over the umbrellas with one foot, two feet and then walk in a zigzag. Then the umbrellas are matched according to their colors and sizes. Then five long and five short umbrellas are counted separately. The teacher says “go to the tables in five steps and sit down”. At the tables, the hands are tapped and clapped five times, the number five is shown on the board, and the number five is drawn in the air with the teacher.”*

*Examples of activities where math activities are given separately are as follows: “Children are asked to point out the objects in our classroom that have one. Number one*

*The drawing is made in the air with a finger. Each child writes the number one on the board. Worksheets and paints are distributed and their work is observed and evaluated.”*

*“Square shapes are placed on the tables and children are asked to cut the square shapes using these molds. Then the children are asked to find the square shapes in the classroom. The teacher explains the square shape to the children using puppets.”*

*“The teacher puts the Legos in the center and asks each child to take three Legos. Then the Legos are mixed and the children are asked to divide the Legos into groups of three in turn. Then the children are given the activity page from the “Mathematics” workbook.”*

### **iii) Music activities**

When the presence of music activities in daily plans was analyzed, it was seen that almost all



of them (N=20) included this activity. When the types of activities under the title of music activities were analyzed, almost all of them included song teaching. As a different music activity, it was found that three plans included rhythm practice with objects, and in one plan, children used musical instruments to create their own music and then composed a song suitable for this music. When the realization process of the music activities was analyzed, it was found that song teaching was the same in all plans. That is to say, a pre-existing song or a song learned by the teacher was first sung a few times by the teacher and then repeated by the children.

*“Children sit in a half-moon shape. The teacher sings the song “My hands are chubby, chubby, chubby”.*

*the song is repeated to the children section by section”.*

*“The teacher sits the children so that they can see. Sound and breathing exercises and sing the song “Red Fish” while holding hands. The song is sung one or two times After it is said, it is repeated with the children.”*

#### **iv) Art events**

Almost all of the daily plans (N=21) included art activities. These activities were generally included in the free time process and were prepared as activities to be carried out according to the

instructions given by the teacher. It was determined that the implementation process and the type of materials used were the same in all of the art activities in the plans. The art activities were explained as first being introduced by the teacher (explaining what to do), then using the materials placed on the tables by the teacher according to the instructions given by the teacher to create a product of the same type. It was also stated that the children were allowed to decorate the products with leftover materials and paints as they wished. The materials used were mainly construction paper, play dough, various paints and leftover materials.

*“A round-edged, indented shape drawn on the tables on background cardboard, scissors, glue, construction paper, paint. Teacher announces that they will work on Mr. germ and cut out the shape given to the children and cut strips of craft paper around it, folded and glued like a ladder. Working by drawing eyes, mouth, nose with paints is completed. Displayed on the board”*

*“Children are shown how to make snails with play dough. Children are asked to make snails in different colors. The snails are varnished after drying. The snails are displayed on a black background cardboard.”*

#### **Concept Education in Daily Plans**

When the daily plans were analyzed according to the concept education

category, it was found that all plans included activities for one or more concepts. In the plans, it was observed that concept education was mostly practiced by working with objects or in a play process with rules in line with the teacher's instructions. Then, in the literacy preparation section of the plan, it was stated that children would do paper and pencil work related to the concept studied that day.

*“The rules of the game called “day and night” are explained to the children. Then the game is played together. Children are asked what happens around us and in the sky day and night. From the answers given, those related to day are written on a white cardboard and those related to night are written on a black cardboard. Children are briefly told how day and night are formed.”*

In the two plans in which concept education was practiced differently from the examples given above, the method followed was as follows: The relevant concept is not specified or explained by the teacher beforehand. Children are left in a process of working with that concept, and after this experience, they express their experiences and feelings and try to come to a conclusion about what they have done, aiming to create an understanding of the concept under the guidance of the teacher.

*“The teacher talks to the children about fruits and vegetables related to the winter season. Then, the children try to estimate the weights of fruits and vegetables by comparing them with each other and compare the results they find by weighing them on a scale with their estimates before weighing them. The children are encouraged to make an evaluation by discussing the heaviness and lightness of fruits and vegetables.”*

*“Children are made to work with watercolors and their attention is drawn to what happens when they work with red and blue colors, whether these two colors appear on the paper or not, and they are made to discuss what emerges from their work.”*

### Methods and Techniques in Daily Plans

When the methods and techniques included in the daily plans were analyzed, it was determined that all of the plans included the question-answer technique. The other most common methods were lecture, demonstration, play and drama. The least common methods included in the plans were discussion, educational movie/TV show and problem solving.

In all of the plans, it was determined that the games other than the free games included in the free time activity were games with rules. Games with rules are usually in the form of moving games structured on rules that are related to the concepts of the day or for the development of psychomotor skills. All of the games were designed in such a way that the teacher explained

the rules and how to play them verbally or by demonstration and then let the children play. The following activities can be given as examples.

*“The teacher creates zigzag, curved and angular lines with colored tapes on the carpet and asks the children to walk in single file on the lines and the “sea-pool” game is started. A big circle and a small circle are drawn for this game. The rules of the game are explained to the children and they are asked to enter the big circle when they say “sea” and the small circle when they say “pool”. Those who fail to enter the circle and remain outside and those who are surprised leave the game. The last ones and those who are not surprised are applauded.”*

### Literacy Preparation Activities in Daily Plans

It was observed that almost all of the daily plans analyzed (N=20) included literacy preparation activities. When the contents of these activities were analyzed, it was determined that all of the literacy preparation activities, except for three of them, were in the form of having the children do worksheets related to the concepts covered that day by explaining the instructions by the teacher. Examples of these activities are as follows.

*“Children sit at the tables, worksheets and crayons are distributed. Explanations and instructions about the square shape are given and the work is started”.*

*“Children sit at the tables, worksheets and crayons are distributed. Instructions for matching and grouping work are given and the work is started”.*

The other three activities included activities related to concept education. Statements that may be examples of these activities are given below.

*“Play games with the toys in the classroom by making applications such as inside, outside, next to the basket, etc.”*

*“Children are told to find and bring toys in blue, yellow and red colors. The toys are grouped according to their colors and sizes”.*

### Discussion

In this study, in which the educational approaches of preschool teachers were tried to be determined, it was tried to examine what kind of a path teachers follow and what kind of studies they include in the planning and implementation of the activities that constitute the learning process. As it is known, it is compulsory to implement the MNE Preschool Education Program in kindergartens and preschools affiliated to the Ministry of National Education. Therefore, the philosophy and approach of this program should be well assimilated and reflected in practice by teachers who are the implementers of the program. The most important task for teachers here is to

make plans and practices that both reflect the understanding of the program and provide a qualified education. For this reason, the program includes formats and explanations on how teachers will prepare their monthly and daily plans. When the opinions of the teachers forming the research group regarding the formats and explanations of the plans were analyzed, it was revealed that a significant portion of them (84.3%) found the plan formats and explanations sufficient and understandable.

In the study, when the level of teachers' utilization of the activity examples in the 2013 Preschool Education Activity Book while planning was examined, it was found that half of them mostly utilized them and the other half occasionally. However, while the level of utilization of teachers did not differ according to seniority, it was found that it differed according to graduation status and it was revealed that associate degree graduates benefited more from the activity examples in the book. It can be considered normal that two-year associate degree graduates benefit from the Activity Book more than bachelor's degree graduates. The way teachers utilized the Activity Book did not show a difference according to graduation status and seniority, that is, 2/3 of the teachers stated that they created their own plans inspired by the activity examples in the book, and 1/3 stated that they prepared their plans by taking the examples exactly. Although it is desirable that the majority of the research group stated that they used the book for guidance purposes, it is an important finding that 1/3 of them used the book differently from its purpose. Because the purpose of preparing the activity book is to convey the purpose, approach and characteristics of the program to teachers with examples. It has a guiding feature in the implementation of the program and it is not the right approach to take and apply it exactly. The fact that 1/3 of the teachers use the activity examples in the book exactly will negatively affect their creativity and most importantly, it will result in not preparing plans suitable for their own child groups.

When the opinions of the teachers regarding the teaching methods and techniques they used in the learning process while planning were analyzed, it was found that the methods they stated that they used the most were question-answer, game, lecture and drama. Analyses in the section of the study in which daily plan samples were analyzed revealed similar results to this finding. It was revealed that question-answer technique was used in all of the daily plans included in the analysis, while lecture, demonstration, play and drama were the most frequently used methods. According to the teachers' opinions, project work and case study methods were used occasionally by more than half of the teachers, while discussion, peer teaching, problem solving and brainstorming were used very rarely. Half of the group also stated that they used the inquiry and discovery method very rarely.

The fact that the lecture method is among the most frequently used

methods according to both teacher opinions and plan analysis makes it clear that teachers are more active in the implementation of activities than preschool children. The lecture method is of course a method that can be used when necessary. Generally, it is a method that can be useful when it is necessary to give information about a subject that has not been mentioned before and when students do not have prior learning (Hollingsworth & Hoover, 1999). However, in a child-centered curriculum in which children's active participation and self-construction of knowledge are at the forefront, teachers are expected to use the lecture method less frequently.

The game method is also the most preferred method according to teacher opinions and plan analysis. Based on this finding, it can be said that teachers are aware of the function and importance of games, especially in preschool education, and therefore they frequently include them in planning the learning process. However, when the contents of the games were analyzed, it was determined that all of the game activities were rule-based games except for the free games played during the free time activity in the learning process section of the plans. In the plans, it is seen that such games are generally designed as moving games with rules prepared for the development of psychomotor skills and concept education. In the games, the teacher first explains the rules and shows how to play and then asks the children to play. The inclusion of such games in preschool education activities is considered natural. Through these games, children's social development is supported, their sensory-motor skills are tested and cognitive development such as attention, memory and integration are supported (Özdoğan, 1997). The point that needs to be emphasized here is that there is too much emphasis on games with rules and that they are always designed with a teacher-centered approach. Including and implementing only games with rules in the plans may lead children to develop false role perceptions about themselves and their teachers. Children may think of themselves as individuals who expect from outside or from an authority what to do in many activities, including games, and then implement them, while their teachers are the ones who explain and show them all the activities to be done. This will lead children to be in a more passive position. For this reason, daily plans should include activities that allow children to play games that they can plan and carry out by thinking, talking and deciding on their own from time to time, and sometimes together with the teacher, and even set the rules. Through such games, children's acquisition of social skills such as decision-making, communication and understanding, and the development of their creativity are supported. At the same time, it will be an approach that allows children to plan, organize and implement things and in which they are active. On the other hand, play activities should be planned in a way that allows for social role plays. With social role plays, children's imitation of different roles during play improves their behavioral vocabulary

and enables them to recognize many role norms, develops empathy and the ability to assume roles, and increases internal control in children (Özdoğan, 1997). In the study, it was found that almost all of the teachers (96.1%) stated that they used role playing mostly or occasionally. It can be said that teachers provide opportunities for the social role plays mentioned above. However, this method or the type of game that includes this method was not found in the daily plans examined.

In the findings including the opinions of the teachers about the methods they used, the demonstration method was not mentioned at all, but it was determined as one of the most used methods in the plan analysis. This may be due to the fact that teachers do not have accurate information about the exact definition and content of this method. Because teachers used this method quite a lot in their plans, especially in activities involving games and science experiments. Demonstration is a method that is mostly used in teaching psychomotor skills and is taught by first showing and explaining the application of a process or a tool and then having the student practice and apply it (Demirel, 2003). A striking point in the plans is that, as mentioned above, teachers generally preferred games with rules prepared for the development of psychomotor skills and concept education as game activities. How to play these games is explained using the show-and-tell method and then children are asked to play. Therefore, the fact that this type of game was preferred in all of the plans examined shows that the demonstration method was also used a lot. The same situation is also observed in science experiments. In the findings obtained as a result of the analysis of the plans related to science activities, it was determined that almost all of the science activities consisted of science experiments, and in the implementation of the experiments in the classroom environment, it was determined that the teachers usually performed the experiment by explaining the experiment first and then letting the children do it. In this case, it can be said that the demonstration method is used quite a lot in the implementation of science activities. However, as will be discussed later, science activities in both preschool and other education levels do not only consist of science experiments. On the other hand, the way of conducting science experiments in the classroom environment is not only the teacher's demonstration and explanation. In a child-centered approach, such an approach would not allow children to engage with the materials one-on-one, observe, question and evaluate them while they are working.

According to teachers' opinions, project work was used occasionally (56.9%), case study method was used occasionally (52.9%) and quite rarely (47.1%), while inquiry and discovery (51.0%), discussion (60.8%), peer tutoring (66.6%), problem solving (66.6%) and brainstorming (64.7%) were among the methods and techniques used quite rarely. Similar data were obtained in the analysis of daily plans. Discussion and problem solving were the least

used methods in the plans. All of these methods and techniques are based on an understanding of active learning, which does not only consist of the child practicing something in the learning process, but also enables them to gain skills such as planning, questioning, using their creativity, generating and implementing ideas, and coping with problems. For this reason, teachers are expected to mostly include such methods and techniques in the implementation of the 2013 Preschool Education Program prepared on the basis of such an approach.

In the planning and implementation of the learning process, in order to support and enrich educational activities, it was found that the majority of teachers included activities such as taking children to out-of-school places such as museums, exhibitions, cinemas and theaters (78.4%), organizing trips to the environment (68.6%) and celebrations on important days (78.4%), and more than half (62.7%) invited guests to the classroom and organized informative conversations. Teachers' tendency to organize field trips to various indoor or outdoor places is a very pleasing situation. As a matter of fact, the implementation of a preschool education program does not only consist of in-class activities. It is possible for children to interact with the environment outside the classroom and engage in the process of spontaneous discovery and learning, and thus meaningful and effective learning can be realized (Whitebread, 1997). In the plans examined, there were no activities involving such excursions.

The fact that almost half of the teachers (45.0%) stated that they organized additional activities by agreeing with experts in the fields of painting, music, drama, etc. as supportive activities is not very surprising when the graduation status of the teachers is taken into consideration. Considering that 58.8% of the teachers in the research group have associate degrees and almost half of them (47.1%) have a seniority of 11 years or more, it can be said that they may have preferred to cooperate with branch teachers because they considered themselves insufficient in terms of developments and innovations in the field.

It is regrettable that very few teachers (17.6%) stated that they occasionally take their children to primary schools in the neighborhood for primary school preparation. This is because this age group should not only be physically and cognitively ready for primary school, but also socially and emotionally ready.

According to teachers' opinions on the use of support materials other than the materials used in educational activities in the planning and implementation of the learning process, it was determined that practice books prepared for concept education such as color, number, shape, space, etc. (92.2%), worksheets (76.4%), practice books for developing mathematics skills (74.5%) and literacy preparation books (70.6%) were used. In daily plans, such activities are usually included under the reading-writing preparation activity,

and during the day, they are mostly carried out as the last activity at the end of the day. As a matter of fact, in the examinations conducted regarding the literacy preparation activities in the daily plans, it was determined that almost all of the plans included a reading-writing activity, and as the last activity of the day, practice books or worksheets containing the concepts or themes covered that day and the information learned about mathematics were applied to the students. In all plans, the teacher explained the instructions of the worksheet and the children worked accordingly.

As seen here, it is not objectionable to use practice books or worksheets in order to support the education and training provided at school, to reinforce concepts, and to help students master certain skills. However, reading and writing preparation activities do not only consist of paper-and-pencil tests using practice books or worksheets, as in the plans examined. Frequent use of such activities may lead children's academic skills to be prioritized and they may be evaluated according to their performance in these activities. However, there are also arguments that such activities ignore certain areas of development, that children may have difficulty in doing them, that they may weaken their sense of achievement, and that they are therefore not developmentally appropriate (Weber, 1970; Bentzen, 1993). At the same time, the fact that such practice books are preferred by teachers shows that a teacher-centered education and training is more predominant. In summary, the fact that teachers give too much space in their plans to such activities for the preparation of reading and writing does not comply with the 2013 Preschool Education Program, which is claimed to be a developmental program in every aspect. Reading-writing preparation activities do not only consist of manual skill activities such as drawing-painting, cutting and folding. Such activities are quite diverse such as visual perception activities, shape-ground discrimination, shape constancy, auditory perception activities, listening, speaking, distinguishing sounds, attention and memory activities, problem solving activities, developing confidence and independent behavior, etc.

When the Turkish language activities in the daily plans found within the scope of the analysis were examined, it was seen that story activities were predominantly included. The way in which the stories are worked with the children is generally in the form of reading a story chosen by the teachers, telling it (sometimes with puppets etc.), sometimes acting it out with the children and then asking questions about the story. The approach followed here is of course not wrong. It is a frequently used method in Turkish activities. In such an activity, it is ensured that children acquire basic mother tongue skills such as listening, listening comprehension, narrating, and expressing themselves in different ways. However, it should be emphasized that Turkish language activities and especially story activities are generally carried out in this way. In the plans, it is seen that Turkish language activities are written in the



same style and probably practiced in the same way, as in literacy preparation activities. When the position and function of the child in such an activity is examined, it is a person who listens, watches and responds. Therefore, the principle of the child's active participation in the learning process is kept in the background. However, such activities can be designed and carried out in a way that children can be more prominent and more active without ignoring the mother tongue skills to be acquired. Starting from a certain point in the stories, children should be given the task of completing the story, creating a story themselves through individual or group work and presenting it verbally, in drama, etc., or recreating a story they have listened to based on its subject, telling the stories they have created at home with their families about a theme determined at school. For example, in one of the plans examined, it was stated that a story chosen by the teacher would be told using puppets, but that the teacher could ask the children to participate in this show at any time as the hero of the story during the show. In another plan, it was stated that children would create and tell a story about a topic inspired by their own memories, and that the relevant topic would be covered in a discussion environment based on these stories. In Turkish language activities other than story activities, activities such as discussions, brainstorming, case studies, problem solving, etc. should be planned and carried out in which methods that children can be active are used more.

In the analyzed daily plans, science and mathematics activities were found to be less common than all other types of activities (Turkish language, music, art, literacy preparation, play). In a qualitative study conducted by Bilaloğlu et al. (2006), a similar result was obtained and it was determined that preschool teachers included very few science activities in their daily plans. The striking point in the daily plans analyzed was that almost all of the science activities consisted of science experiments, and these experiments were usually carried out using the demonstration method. Such an approach is appropriate for science education with preschool children, but experiments should not always be conducted using this method. In the implementation process of science experiments, the teacher can use different techniques involving children depending on the content of the experiment. For example, the experiment can be carried out for the first time by the children under the guidance of the teacher by giving the experimental materials to the children or allowing the children to obtain these materials, and they can evaluate the process based on their own experiences and make comments about the result. Group work can be done, with each group conducting a different experiment and then presenting it to each other and discussing the results.

Science education in the preschool period is carried out with different activities and techniques other than science experiments. A science activity that is different from the experiments in the plans is quite different. In this science activity, it was stated that a mother and her baby would be invited to the classroom

by the teacher, and that the aim was for children to learn concepts such as growth, development, and change more concretely by comparing the baby, the mother, and themselves, asking what they were curious about, and observing the baby. As in this activity, science activities that will be carried out by providing children with experiences that will enable them to make observations, make investigations and draw conclusions will also prioritize their scientific developmental characteristics. This is because preschool children cannot comprehend the change in an event or an object without observing or doing it themselves, and they cannot make inferences about the results. Therefore, the main purpose of science education at this age level should be to provide first-hand experiences and to investigate events and objects in the immediate environment (Harlen, 1985).

The fact that very few science activities are included in the plans and that the activities that are included consist of science experiments performed in the same style suggests that preschool teachers may have problems in this field. Although this study did not investigate whether teachers have competencies or problems related to science education, there are some studies that found that preschool teachers generally have insufficient knowledge and skills in planning and implementing science education and that they do not know effective teaching methods to be used in science activities (Ayvacı et al. 2002; Demiriz & Ulutaş, 2000; Güler & Bıkmaz, 2002).

When the daily plans within the scope of the analysis were analyzed in terms of mathematics activities, it was determined that mathematics concepts and information were generally given in play and literacy preparation activities. It is an approach recommended in the literature and adopted by teachers to integrate mathematics education in preschool period with activities in daily plans such as play, music, mother tongue and art (Arnas, 2005). However, the fact that mathematics education in the activities in the plans is entirely in the form of operations performed by the children with the teacher's instructions raises the concern that the teacher's role is too dominant and the children are in a more passive position. In all the plans, mathematics activities are planned in the form of children finding the number of objects from the classroom and bringing them to the teacher or showing them to the teacher, grouping or separating toys into the number of groups, counting, taking the number of steps, etc. in the process of a rule-based game played in a set-up created by the teacher. What is emphasized here is that this type of work is not wrong in mathematics education, but it is the only type of work preferred in the plans. However, mathematics education can be much more effective and enjoyable by creating problem situations in which children can reach solutions individually or in groups by observing, researching, exploring, thinking about, and making predictions. In addition to play activities, mathematics education is also included in the plans within the scope of literacy preparation activities. This finding is in line with the finding that most of the teachers stated that they use practice books that develop mathematics skills

(74.5%) and literacy preparation books (70.6%) as support materials.

One of the most common types of activities included in daily plans is music and art activities. As discussed in other activities, it is noteworthy that music and art activities are planned in the same style and teacher-directed education. It was determined that the music activities in the plans were paired with song teaching and almost all of them involved the teacher teaching a song by having the children repeat it. However, as seen in a few plans, music activities can be planned in the form of rhythm studies, sound studies, children creating their own music with musical instruments or different tools in the classroom, listening to and discussing different types of music and music from different countries, explaining the result by experimenting with the interaction of various materials and sounds, creating musical stories, creative dance activities (DeVries et al., 2002). Including such musical activities in the plans in addition to song teaching will enable children to use their creativity, be more active and productive, discover their talents and learn that music does not only mean singing (Ömeroğlu, 2003).

In the daily plans, art activities were generally included in the free time period and were planned as introducing the activity by the teacher and working with the materials placed on the tables according to the instructions. It can be said that in all of the plans, there was a tendency that the same product was created at the end of the activity (a pre-drawn bird, a train, a snail, or a maracas, etc.) and that children were allowed to decorate the product as they wished, not while it was being made, but after it was finished. The main limitation of teaching in which the teacher prepares step by step how to make the product and watches each child make it accordingly is that children are not free to experiment, explore or invent. In such activities, children are expected to watch, listen and imitate the teacher (DeVries et al. 2002). In such a study, it is not possible for children to do things according to their interests and desires and by using their creativity. Because, as seen in the examples given in the previous section, there are activities in which the teacher decides from the materials to be used to all stages of the product to be created and the children are only asked to do it. In the teaching of a certain technique, of course, the teacher will be at the forefront and the technique will be tried to be taught with its stages. However, art activities cannot consist only of such activities, and project activities that involve individual or group work, where children can decide on the materials to be used and the product to be created by themselves or jointly with the teacher, should also be frequently included. The fact that almost all of the teachers in the first part of the study stated that they used project work occasionally or very rarely among the methods and techniques they used and that it was not found in their plans at all shows that they prefer more structured activities in art activities. On the other hand, the most important emphasis of student-centered education is that the products expected from students are different according to their individual differences.

For this reason, it is important to give children more opportunities to create different and desired products, perhaps with the same materials.

When the literature on how to teach concepts in daily plans was examined, it was determined that it was mostly done by the teacher working with objects by explaining or showing what the concept was, or by activities structured by the teacher during the rule-based play process. In literacy preparation activities, paper and pencil work was planned to reinforce the concept. This approach is frequently used in concept education. However, it was found that very few of the plans examined included activities that involved learning by discovery and enabled the child to be in a process in which he/she could create ideas about the concept with his/her own experiences. The finding that this approach was rarely used in the plans is consistent with the fact that almost all of the teachers (90%) stated that they used the inquiry and discovery method occasionally and very rarely. This approach, which involves children learning by questioning and exploring, should definitely be included especially in the preschool period. Such activities direct children towards a tendency in which they try to construct knowledge on their own rather than taking it ready-made from the teacher. In addition, the use of different methods such as project studies in concept education improves children's decision-making and problem-solving skills and may lead to an increase in performance in activities. In a study conducted by Güven et al. (2003), concept education was carried out using the project approach, and as a result of the study, it was observed that children working by producing projects helped them to get to know objects more closely and in detail, to gain more experience, and to answer the questions that they could not do or left unanswered in the paper and pencil tests (worksheet) during project production and presentation. This kind of work allows children to be truly active and constitutes a true example of child-centered education.

The most important role in the implementation of an education program undoubtedly falls to the teacher. The nature of the curriculum determines the role of the teacher in some way. Academic programs that give children the responsibility of solving tests and focus only on the development of skills cause the teacher to be more rigid and have a more limited relationship with the children (Schwartz, 1997). Such programs consist of activities presented by the teacher and children responding to these activities and are implemented with a teacher-centered approach (Lunenburg, 2000; Schweinhart & Weikart, 1998). However, in child-centered programs, which are now accepted by the whole world, the role of the teacher is completely different. A teacher with a child-centered approach is a person who observes children very well, recognizes their interests and directs them to activities, works with children in deciding, planning and implementing activities, enables children to enter new learning processes and encourages them. The 2013 Preschool Education

Program is a program developed with a child-centered and developmental approach from this perspective. Therefore, preschool teachers who implement this program should also have such an understanding and have traces and features of the child-centered approach in their planning and implementation of the learning process.

As a result, it was determined that preschool teachers generally implement a child-centered program with a teacher-centered approach. It was revealed that the methods preferred by the teachers both in their own opinions and in their daily plans were very limited and that they mostly used lecture, question-answer, play and drama. The frequent use of the lecture method suggests that teachers have more of a tendency to convey things to children, on the other hand, the question-answer method is mostly used after the story to measure whether the story has been understood or not, and the game method is used in the form of games with rules designed by the teacher. In a child-centered approach, methods and techniques such as project work, case studies, questioning and discovery, problem solving, brainstorming should be used more, but it was determined that teachers preferred them very little. In the daily plans of the teachers, it was determined that although there were fewer science and mathematics activities in terms of activity types, there was diversity, but almost all activity types such as Turkish language activity=storytelling, music activity=song teaching, art activity=making a product according to a model, science activity=experimentation, reading-writing preparation study=application book/worksheet were planned in the same or a uniform learning process. Another striking finding of the study was that teachers tended to use practice books or worksheets for concept and mathematics education too much and included such activities in literacy preparation activities. However, in practice, it can be said that the misconception that literacy preparation activities consist only of paper and pencil activities is still maintained. Teachers' tendency to include few mathematics activities in their plans but to use mathematics practice books a lot reveals the idea that they adopt the practice of mathematics education with paper and pencil activities more and perhaps find it easier. The view that emerges here is that the activities are prepared step by step by the teacher and the children perform these activities in the specified order. In such a view, it can be said that in the preschools included in the scope of the research, an education is carried out in which the teacher, who decides and plans everything, is at the center and the children are in a passive position, obeying all these decisions and plans and waiting for what to do after an activity. As found in the research, in a teacher-centered approach, each child is provided with the same instructions and materials and is expected to achieve the same results (DeVries et al., 2002). This situation is not very compatible with the approach and characteristics of the 2013 Preschool Education Program implemented in these institutions.

Smith (1996) advocates an educational approach that recognizes that teachers have great power in influencing children's development and argues that positive change in children can be much more likely if teachers observe children, know their cultural characteristics, develop close relationships with them, allow children's active participation, and plan activities interactively with them. Therefore, in planning and implementing the learning process, teachers in preschool education practices should make more effort to give more space to children's ideas, wishes and interests, to plan together with them, and to allow children to make sense of the information themselves through problem-based activities that they can perform rather than what they want children to do or say.

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# Chapter 5

## **THE MEDIATING IMPACT OF PARENTAL SELF-EFFICACY AND PARENTAL INTEREST ON THE RELATIONSHIP BETWEEN SOCIOECONOMIC STATUS AND STUDENTS' ACADEMIC PERFORMANCE**

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## **Introduction**

Research studies addressed the hypothesis examining how and to what extent parents' self-efficacy and interest in education of children mediated the relationship between socioeconomic status (SES) and academic performance of children. The study, which was carried out on 203 first and second grade primary school students and their parents, utilized a multidimensional approach combining variables and a structural equation to test the proposed hypothesis on both mothers and fathers. The results for mothers demonstrated that their self-efficacy and involvement in socializing, educating, and rearing their children mediated the association between socioeconomic status and academic performance of children. Having said that, the hypothesis was not supported as far as fathers were concerned and certain differences between mothers and fathers were displayed. A review of the literature on parenting education revealed that the research addressed almost totally on mothers, and few studies included fathers, although many authors systematically recommended including fathers in research (Kim & Hill, 2015; Tamis-LeMonda & Cabrera, 2002). It was asserted that studies on parental self-efficacy and parental interest regarding education of children tended to ignore fathers despite the pivotal role they played in the development of children and their learning process; nevertheless, this role started to become increasingly more recognized (Jones & Prinz, 2005; Murdock, 2013).

Studies investigated whether parental self-efficacy and parental interest for socializing, educating and rearing children mediated the association between family socioeconomic status and academic performance of children, and how and to what extent they could mediate this relationship. Many studies dealt with parental self-efficacy and parental interest separately, although few studies investigated the relationships between parental self-efficacy and parental interest (Hoover-Dempsey et al., 2001; Shumow & Lomax, 2002). The current research reexamined prior research focusing on the links between parental self-efficacy as well as parental involvement in socializing, educating and rearing processes and children's academic performance. The research employed the structural equation method to test on mothers and fathers and compare the theoretical model for the mediation of parents' self-efficacy and interest in the impact of socioeconomic status on academic performance of children and presented the research results.

### **Parental Self-Efficacy in Socialization, Education and Rearing Processes**

Bandura (1986) put forward the self-efficacy theory to explain an individual's belief and confidence in his or her own abilities to successfully perform a task or set of tasks. Parents' self-efficacy was regarded as the main mechanism and played a pivotal role in teaching, instilling, establishing

and regulating expected and desired child behaviors during socialization, education, and rearing processes. Bandura and Wood, (1989) and (Cervone 2000) indicated that parents' self-efficacy in these processes displayed their ability to deploy cognitive resources and behaviors required to control events in their lives. It was asserted that individuals' self-efficacy was a dynamic concept that was subject to change as per the requirements of the expected and desired task, environmental circumstances, and previous experiences of individuals (Coleman & Karraker, 1998).

Parents' self-efficacy in socialization, education, and rearing processes was explained as parents' perceptions of their own abilities to exert positive effect on behavior, learning, and academic performance of children (Coleman & Karraker, 1998). Parental self-efficacy with regard to socializing, educating and rearing children can also be described as parental beliefs that may have a positive impact on learning and academic performance of their children (Hoover-Dempsey, 2011; Shumow, 2003). Parental self-efficacy was related to parents' socializing, educating and rearing practices as a subject of intense study. Mothers and fathers with high self-efficacy for socializing, educating and rearing were more involved and engaged in their children's play, learning, and everyday home activities (Giallo, Treyvaud, Cooklin & Wade, 2013). A study discovered a connection between high levels of parental self-efficacy in socialization, education and rearing, and positive parenting skills such as warmth, affection, and support (Shumow & Lomax, 2002). Yet another study demonstrated that parents with higher levels of self-efficacy adopted educational practices and strategies that facilitated and enabled academic and social learning (Ardelt & Eccles, 2001). Studies stated that there were positive connections between parents with high levels of self-efficacy in socializing, educating and rearing and the cognitive development of their children (Jones & Prinz, 2005). Conversely, parents with lower levels of self-efficacy in socializing, educating and rearing processes were likely to encounter difficulties in managing and resolving conflicts with their children. Parents' lack of belief and confidence in their own abilities might give rise to parental frustration, anxiety, anger and resentment (de Haan, Prinzie & Dekovic, 2009; Slagt et al., 2012).

### **Parents' Involvement in Their Children's Education Dimensions of Parental Involvement**

Grolnick and Slowiaczek (1994) defined parental involvement in education as allocation of the economic and psychological resources of parents to their children's education, such as providing help with homework and participating in school life in order to enhance and improve the educational development and academic performance of their children. Researchers asserted that parental involvement was multifaceted and multidimensional, and also included a broad range of socialization, training, and rearing practices (Englund, Luckner,

Whaley & Egeland, 2004). Parents were able to engage in education of their children both at home (Giallo et al., 2010) and at school (Stacer & Perrucci, 2013).

Home-based parental involvement comprised many dimensions including (1) aiding and monitoring homework, (2) supporting schoolwork and lessons, (3) talking about and discussing what children do at school, (4) aspirations and expectations for education and academic performance of their children (Altschul, 2012; Epstein, 2001). School-based parental interest, on the other hand, included dimensions such as (1) communicating and conferring with teachers about children's school work and lessons, (2) participating in school organizations and meetings, (3) participating in school life, and (4) attending in official organizations such as school committees and parent-teacher associations (Pomerantz, Kim & Cheung, 2012).

### **Results of Meta-Analyses of the Impacts of Parental Interest in Education on Students' Academic Performance**

Various meta-analyses were carried out to investigate the association between parental interest in education and academic performance of their children. In his meta-analysis, Crimm (1992) determined that parental interest in education had a positive effect on students' academic performance, starting in kindergarten, peaking in elementary school, and going unnoticed in high school. Another meta-analysis revealed strong connections between students' academic performance and parental support, and reported that students' academic performance was much less strongly associated with dimensions such as monitoring homework, participating in school-organized activities, and communicating and conferring with school and teachers (Rosenzweig, 2000). Jeynes (2005, 2007) also found a positive relationship between parental involvement as well as participation in children's schoolwork and their academic performance.

Previously conducted meta-analyses revealed that the dimensions of parental involvement in education were positively correlated with students' academic performance despite the fact that the influence sizes of parental interest on students' academic performance were small to moderate (Hill & Tyson, 2009). Parents' involvement and participating in their children's homework was the most widely studied dimension of parental involvement in education (Warton, 2001), and it was reported that homework was one of the most frequent means of connection between school and home (Wingard & Forsberg, 2009). Having said that, research results for parents' involvement and participating in homework of children were seemingly contradictory (Trautwein et al., 2006).

Some researchers asserted that parental assistance with homework had a positive impact on academic performance of their children (Xu, 2004); whereas, other studies did not confirm that parental homework assistance had a specific impact on children's academic performance (Levinetal et al., 1997). A few studies notified negative relationships between parental aid with homework and students' academic performance (Patall, Cooper & Robinson, 2008; Pomerantz, Moorman & Litwack, 2007).

It was indicated that studies that revealed conflicting findings were mostly dependent on quantitative measures of parental involvement and engagement in homework. Conversely, it was suggested that studies focusing on the nature and quality of parental interest and engagement in homework yielded more consistent findings (Pomerantz & Moorman, 2010). When homework assistance was structured, children's autonomy was supported and also characterized by positive emotions, qualitative studies displayed a positive relationship between parental interest and engagement and student learning (Grolnick et al, 1991; Pomerantz et al., 2007). Contrarily, it was pointed out that parental involvement and engagement had a negative influence on learning when parents misunderstood the purposes of homework help, when parental assistance confused children, when parents applied excessive control, and when parental aid was accompanied by negative emotions (Christenson, 2004; Pomerantz et al., 2007).

### **Parental Aspirations Regarding Academic Performance of Children**

Studies revealed that children attained better educational outcomes and continued education longer when their parents had higher educational aspirations and expectations compared to the children of parents with relatively lower educational aspirations and expectations (Davis-Kean, 2005; Jeynes, 2011). Likewise, meta-analyses indicated that aspirations and expectations of parents predicted strongly educational success of children (Jeynes, 2005, 2007). Although parental aspirations and expectations were considered dimensions of parental involvement, other researchers such as Pomerantz, Kim, and Cheung (2012) asserted that they were distal variables of parental involvement. Special emphasis was attached to the positive impacts of parental aspirations and expectations on students' academic performance. The aspirations and expectations of the parents for the education of their children could stimulate the educational and academic involvement of the parents, and this parental involvement could impact educational and academic performance of children (Tazouti & Jarlégan, 2014).

### **Relationship between Time Spent on Homework and Academic Performance of Students**

It has been emphasized that it was important to draw a distinction between time children spent on homework and time parents said they spent for homework assistance. It was also pointed out that the association between time students spent doing their homework and their academic performance might differ depending on different periods in children's school life. It was asserted that elementary school students who found schoolwork and lessons difficult were inclined to spend more time on doing homework, and it was also pointed out that those students' parents spent more time providing homework assistance (Tazouti & Jarlégan, 2015). As a matter of fact, theorists and researchers argued that parental assistance with homework was often a reaction and response to difficulties faced by students' with schoolwork and lessons (Pomerantz & Moorman, 2010). Results associated with secondary education displayed that successful students spent more time on doing homework, and longitudinal data indicated that students who spent more time on homework improved and upgraded their skills over time (Campbell et al., 2000).

### **Association between Parents' Self-Efficacy and Interest of Parents**

Studies investigated the relationship between parents' self-efficacy and parental interest, and underlined the relationship between parents' self-efficacy and the understanding of the role of parents. It was demonstrated that parents' self-efficacy in socialization, education, and rearing processes enhanced their competence and skills to monitor schoolwork and lessons of their children (Cooper et al., 1998; Hoover-Dempsey et al., 2001). It was expressed that there was a connection between parents' self-efficacy and interest with the purpose of socializing, educating and rearing their children and their academic performance (Brody, Flor & Gibson, 1999). Given the fact that the impacts of parental self-efficacy on academic performance of children in socialization, education and rearing processes could be realized through parental involvement, it was pointed out that there were indirect relations between parents' self-efficacy and academic performance of children (Hoover-Dempsey et al., 2001). In the same manner, parents' self-efficacy predicted their competence and skills to monitor their adolescents and participate in their education. Parental monitoring of their adolescents and their involvement in their education also predicted the academic adjustment of adolescents (Shumow & Lomax, 2002).

Studies employed structural equation modeling (SEM) to test and compare the impacts of mothers' and fathers' self-efficacy and involvement on academic performance of children. Using the findings of the study outlined above, the researchers hypothesized that parental self-efficacy and parental involvement were the variables that mediated the association between socioeconomic status

and academic performance of students. Quite a few studies compared the self-efficacy and involvement of mothers and fathers in mediating the impacts of family socioeconomic status on academic performance of children (Giallo et al., 2013; Slagt et al., 2012). Researchers adopted a multidimensional approach to get a new perspective on parental self-efficacy and parental interest. Employment of structural equation modeling (SEM) (1) allowed researchers to look beyond simple relationships and examine a complex structure in which few explanatory variables relied on other explanatory variables. (2) It allowed them to make a distinction between distant and close variables as regards the main types of independent variables. (3) It could also demonstrate the direct and indirect impacts of different variables (Dumont et al., 2012). Family socioeconomic status was addressed and examined as an independent variable and students' academic performance as the ultimate dependent variable. Parental aspirations for educational success of their children, parental self-efficacy, parental interest, and time they spent aiding their children with homework were also addressed and examined as other latent variables.

## **Method**

### **Participants**

A total of 88 boys and 115 girls attending the first or second year of primary school participated in the study that examined whether parental self-efficacy, parental interest, and family socioeconomic status mediated their effects on the academic performance of the students. The students participating in the research sample had a mean age of 8 years and 4 months, and a standard deviation of 8 months. They were selected from 7 primary schools that exhibited great differences in terms of socioeconomic level. While two of the schools included students from lower socioeconomic and disadvantaged backgrounds, which often consisted of lower-income and lower-educated parents, three of them included students from an extensive social mix. Students in the last two schools were mostly from families of higher socioeconomic status and more privileged backgrounds. The current study used the education levels of the mothers and fathers as well as the space available in the family home to evaluate the socioeconomic status of the families of the students. As a common and extensively used indicator in research, the available and usable space in the family home was determined by splitting the count of rooms, except for the kitchen and bathroom, by the count of people living in the house.

### **Procedures**

The current research was first presented and introduced as a university study to explore the association between the educational practices of families and students' academic performance. Also, contact and communication was established with school administrators and teachers to perform the study. School administrators and teachers were briefed about the research topic

and objectives, and they were informed that the research would be published with its full objectives and results, and would eventually be converted into a document explaining the research objectives and results. Survey questionnaires were delivered to parents living together as spouses through schools. Each mother and father received a separate envelope including the questionnaire accompanied by a letter elucidating the guidelines and rules to be pursued while completing the questionnaire. The most important instruction conveyed to the parents involved a warning that the mother or father should complete the questionnaire individually, without consulting one other. After each parent completed the questionnaire and put it in the return envelope, the children handed the envelope containing the questionnaire filled in by the parents to the classroom teacher. Twenty-two of the questionnaires were deleted or canceled as a result of parents' failure to follow instructions. 203 questionnaires were completed by the parents in compliance with the instructions.

### **Measures**

#### **Data Analysis**

All documents related to each child were grouped and data were coded, anonymized and entered into a computer database.

**Parents' Aspirations and Expectations for Academic Performance of Children** Researchers assessed parents' aspirations for education of their children by asking them about the level of education they anticipated their children would acquire. Parents replied the questions using a five-point scale from the lowest probable level to the post-university graduate level. In order to assess parents' expectations for education of their children, they were asked to write down the level of education they anticipated their children to acquire, and their answers were again measured using a five-point scale from the lowest probable level to the post-university graduate level.

#### **Parental Self-Efficacy in Socialization, Education and Rearing Processes**

In the current study, the self-efficacy of mothers and fathers to socialize, educate and rear their children was measured independently using a 19-item questionnaire (Tazouti & Jarlégan, 2015). The questionnaire contained three dimensions, including (1) the school-related competencies of parents, such as "I feel capable of explaining the lessons to my child", (2) the general competencies of the parents, such as "I feel comfortable and good at playing my role as a parent to socialize, educate and rear my child", (3) the self-efficacy of the parents, such as "I can attend the school meetings of the parents". Parents' responses to school-based competencies, general competencies, and competencies associated with school life were evaluated on a 5-point Likert scale.



### **Parents' Interest in Education of Their Children**

In the current research, a nine-item questionnaire was employed to measure parents' interest in education of their children (Tazouti & Jarlégan, 2015). The questionnaire included three categories: (1) aid with schoolwork, such as "Do you help your children with schoolwork like homework etc.?"; (2) talking about and discussing the school-related issues, such as "Do you talk to your children about their day at school?"; (3) participation in school life, such as "Do you participate in excursions and trips organized by the school?" The answers provided by the parents about their interest in children's education in categories such as helping their children with schoolwork, talking about and discussing school, and participating in children's school life were evaluated on a 5-point Likert scale.

### **Time Parents Spend Monitoring Schoolwork and Studying of Their Children**

In the study, the parents were asked the following two questions in order to measure the amount of time they spent to monitor schoolwork and study of their children. "How much time, on average, do you devote to your children's schoolwork and studying during the week?" "How much time, on average, do you spend on your children's schoolwork and studying at the weekend?"

### **Students' Academic Performance**

In order to determine academic performance, the researchers asked teachers to rate students' skills in reading and math on a scale of 1 to 10. The average rating for reading was 7.70 with a standard deviation of 2.05, while the mean rating for mathematics was 7.94 with a standard deviation of 1.92. The correlation between the mean assessments for reading and mathematics was found to be high ( $r = .80$ ;  $p < .01$ ).

## **Results**

### **Descriptive Statistics and Correlational Analyses**

Both the means and standard deviations of the research variables and coefficients of internal consistency for different scales were presented and introduced in Table 1. Firstly, analyses were conducted to explain the differences between the mean points for mothers and fathers. As can be seen in Table 1, the study discovered a significant difference in the self-efficacy of parents as regards participation in school life on account of the fact that the average score of mothers was much higher than that of fathers. As far as all dimensions of parental interest in their children's education were concerned, studies always exhibited differences in favor of mothers.

Significant differences were reported related to the amount of time each parent spent aiding their children with homework. While mothers spent more time aiding their children with homework on weekdays as compared to fathers, fathers spent more time aiding their children with homework on weekends.

**Table 1** Descriptive statistics for mothers and fathers

|   | Number of items | Mothers      |                    |                  | Fathers      |                    |                  | t             |
|---|-----------------|--------------|--------------------|------------------|--------------|--------------------|------------------|---------------|
|   |                 | Mean         | Standard deviation | Cronbach's alpha | Mean         | Standard deviation | Cronbach's alpha |               |
| Parental aspirations for education of their children      | 1               | <b>4.48</b>  | 0.95               | -                | <b>4.46</b>  | 0.90               | -                | <b>3.74</b>   |
| Parental expectations for education of their children     | 1               | <b>4.47</b>  | 0.94               | -                | <b>4.45</b>  | 0.99               | -                | <b>3.15</b>   |
| Parental self-efficacy in general                         | 8               | <b>4.61</b>  | 0.37               | 0.81             | <b>4.58</b>  | 0.40               | 0.81             | <b>0.89</b>   |
| Parental self-efficacy in school-related issues           | 8               | <b>4.62</b>  | 0.52               | 0.89             | <b>4.54</b>  | 0.57               | 0.89             | <b>1.82</b>   |
| Parental self-efficacy in school life                     | 3               | <b>4.31</b>  | 0.71               | 0.68             | <b>3.82</b>  | 0.98               | 0.78             | <b>7.02*</b>  |
| Parental involvement in aiding with homework              | 3               | <b>3.54</b>  | 0.60               | 0.79             | <b>2.90</b>  | 0.75               | 0.82             | <b>9.86*</b>  |
| Parental involvement in talking about school              | 3               | <b>3.43</b>  | 0.55               | 0.79             | <b>3.10</b>  | 0.67               | 0.85             | <b>6.33*</b>  |
| Parental involvement in school life                       | 3               | <b>2.58</b>  | 0.74               | 0.60             | <b>1.98</b>  | 0.68               | 0.65             | <b>10.06*</b> |
| Time spent on helping schoolwork and tutoring on weekdays | 1               | <b>30.67</b> | 9.66               | -                | <b>26.38</b> | 11.3               | -                | <b>5.55*</b>  |
| Time spent on aiding school work and tutoring at weekends | 1               | <b>26.38</b> | 11.2               | -                | <b>31.06</b> | 9.71               | -                | <b>-6.23*</b> |

(Tazouti & Jarlégan, 2019, p. 257) \* $p < .05$ .

Correlations between research variables were presented and introduced in Table 2. It was shown that significant correlations existed between mothers and fathers for all dimensions except for aiding their children with homework. The highest correlation was observed in parents' educational expectations from their children ( $r = .72, p < .01$ ), while all other significant correlations were moderate.

**Table 2** Correlations for research variables

|  |                   |                   |                   |                   |                   |             |                   |                   |                   |                   |             |             |
|--|-------------------|-------------------|-------------------|-------------------|-------------------|-------------|-------------------|-------------------|-------------------|-------------------|-------------|-------------|
|  | 1                 | 2                 | 3                 | 4                 | 5                 | 6           | 7                 | 8                 | 9                 | 10                | 11          | 12          |
| 1. Parental aspirations for education of their children        | <b>0.69</b><br>** | 0.66<br>**        | 0.19<br>**        | 0.30<br>**        | 0.26<br>**        | 0.18<br>*   | 0.22<br>**        | 0.19<br>**        | -0.10             | -0.21<br>**       | 0.27<br>**  | 0.27<br>**  |
| 2. Parental expectations for their children's education        | 0.66<br>**        | <b>0.72</b><br>** | 0.20<br>**        | 0.28<br>**        | 0.24<br>**        | 0.13        | 0.17<br>*         | 0.18<br>**        | -0.11             | -0.18<br>*        | 0.37<br>**  | 0.37<br>**  |
| 3. Parental self-efficacy in general                           | 0.10              | 0.14              | <b>0.27</b><br>** | 0.62<br>**        | 0.38<br>**        | 0.18<br>*   | 0.33<br>**        | 0.18<br>**        | 0.07              | 0.03              | 0.08        | 0.07        |
| 4. Parental self-efficacy in school-related issues             | 0.19<br>**        | 0.21<br>**        | 0.51<br>**        | <b>0.44</b><br>** | 0.45<br>**        | 0.34<br>**  | 0.35<br>**        | 0.24<br>**        | 0.08              | -0.11             | 0.16<br>*   | 0.13        |
| 5. Parental self-efficacy in school life                       | 0.15<br>*         | 0.07              | 0.46<br>**        | 0.51<br>**        | <b>0.35</b><br>** | 0.23<br>**  | 0.31<br>**        | 0.55<br>**        | 0.01              | -0.13             | 0.17<br>*   | 0.14<br>*   |
| 6. Parental involvement in helping with homework               | -0.09             | -0.07             | 0.28<br>**        | 0.41<br>**        | 0.20<br>**        | <b>0.07</b> | 0.55<br>**        | 0.34<br>**        | 0.48<br>**        | 0.14              | -0.04       | -0.05       |
| 7. Parental involvement in talking about school                | 0.11              | 0.20<br>**        | 0.43<br>**        | 0.40<br>**        | 0.30<br>**        | 0.49<br>**  | <b>0.26</b><br>** | 0.35<br>**        | 0.30<br>**        | 0.05              | 0.09        | 0.06        |
| 8. Parental involvement in school life                         | 0.28<br>**        | 0.13              | 0.17<br>*         | 0.27<br>**        | 0.58<br>**        | 0.21<br>**  | 0.32<br>**        | <b>0.28</b><br>** | 0.09              | -0.11             | 0.07        | 0.03        |
| 9. Time spent on helping schoolwork and tutoring on weekdays   | -0.22<br>**       | -0.19<br>**       | -0.06             | -0.06             | -0.11             | 0.27<br>**  | 0.05              | -0.07             | <b>0.44</b><br>** | 0.50<br>**        | -0.24<br>** | -0.17<br>*  |
| 10. Time spent on helping school work and tutoring at weekends | -0.11             | -0.12             | 0.06              | -0.12             | -0.06             | 0.11        | 0.03              | 0.02              | 0.45<br>**        | <b>0.50</b><br>** | -0.31<br>** | -0.27<br>** |
| 11. Score in reading   | 0.27<br>**        | 0.38<br>**        | 0.11              | 0.26<br>**        | 0.16<br>*         | 0.01        | 0.09              | 0.19<br>**        | -0.30<br>**       | -0.24<br>**       | -           | 0.80<br>**  |
| 12. Score in math  | 0.28<br>**        | 0.38<br>**        | 0.12              | 0.20<br>**        | 0.14<br>*         | 0.03        | 0.06              | 0.10              | -0.28<br>**       | -0.17<br>*        | 0.80<br>**  | -           |

N = 203, \* $p < .05$ , \*\* $p < .01$ . Diagonal **dark-bold** values indicated significant correlations between mothers and fathers. (Tazouti & Jarlégan, 2019, p. 258)

### (a) Measurement Model

Confirmatory factor analysis (CFA) was used to assess measurement models for 6 latent variables in the study. It was stated that the indicators appropriate for different factor analyses were satisfactory and all the ways were significant.

**(b) Structural Model** Certain trends could be observed in relation to parents' self-efficacy and interest in socializing, educating and rearing children mediating the impacts of socioeconomic status on academic achievement of children:

(1) The research determined positive and significant associations between socioeconomic status and mothers' self-efficacy ( $\beta = 0.87, p = .01$ ), and between socioeconomic status and mothers' expectations for education of their children ( $\beta = 0.65, p = .03$ ). Otherwise stated, positive and significant correlations were revealed between higher socioeconomic status of families, higher self-efficacy of mothers, and higher aspirations and expectations of mothers for education of their children. When their socioeconomic status increased, mothers' self-efficacy in socializing, educating and rearing processes improved and they had higher aspirations and expectations for education of their children. Conversely, socioeconomic status had a negative and significant impact on parental involvement ( $\beta = -0.39, p = .03$ ) when a family had higher socioeconomic status and a mother had lower involvement.

(2) Aspirations and expectations of mothers for education of their children seemed to have a negative impact on the amount of time mothers spent aiding their children with homework ( $\beta = -0.32, p = .03$ ). Moreover, a negative impact of mothers' aspirations and expectations for education of their children on mothers' self-efficacy was also discovered ( $\beta = -0.41, p = .03$ ). Conversely, educational aspirations and expectations of mothers had a positive impact on academic performance of children ( $\beta = 0.28, p = .03$ ).

(3) The study found strong, positive correlations between maternal self-efficacy and maternal interest in education of children ( $\beta = 0.89, p = .01$ ). Conversely, maternal self-efficacy seemed to have a negative impact on the amount of time spent on homework assistance ( $\beta = -0.49, p = .03$ ).

(4) The study also established that maternal interest in education of children had a positive impact both on the amount of time mothers spent aiding with homework ( $\beta = 0.60, p = .02$ ) and on academic performance of their children ( $\beta = 0.20, p = .04$ ).

(5) Lastly, time mothers spent assisting with homework seemed to have a negative correlation with academic performance of children ( $\beta = -0.37, p = .03$ ) (Tazouti & Jarlégan, 2019, p. 259). The total impacts of different variables on students' academic performance varied as direct and indirect impacts.

The greatest total effect of socioeconomic status on students' academic performance was 0.37 for mothers and 0.28 for fathers as effect sizes, and all of these emerged as indirect effects.

### **Model Applied to Fathers**

In the present study, Chi-square test was used to find out whether mothers and fathers differed or not. A more in-depth examination of the model for fathers demonstrated that the appropriate indicators were satisfactory. Measurement patterns were almost identical to those for mothers. Four of the 12 pathways tested for the structural model exhibited differences between the models for mothers and fathers. In one of the pathways, aspirations and expectations of fathers for their education of their children had a positive impact on parental involvement ( $\beta = 0.22, p = .04$ ). For that reason, what was significant for fathers was not so for mothers. Moreover, the three pathways, namely (1) linking parental self-efficacy to time spent on homework assistance, (2) linking parental involvement to academic performance of students, and (3) linking time fathers spent helping homework to students' academic performance, were significant for mothers but not so for fathers.

### **Discussion**

The current study explored whether parental self-efficacy and parental interest mediated the association between socioeconomic status and students' academic performance to socialize, educate and rear children. Otherwise stated, the study examined whether parental self-efficacy and parental interest during socialization, education and rearing processes mediated the impacts of socioeconomic status on students' academic performance. The study attempted to test the hypothesis that parents' self-efficacy and parental interest were the variables that mediated between the family socioeconomic status and students' academic performance in the socialization, education and rearing processes. The tested models provided satisfactory indicators and were able to account for a large rate of students' academic performance. Most of the tested pathways seemed to be significant; nevertheless, the results supported the hypothesis only in the case of mothers but not fathers. Multiple-group analyzes (MGA) revealed significant differences between causality networks for mothers and fathers due to the fact that independent variables did not produce the same impacts on dependent variables.

In studies reporting such differences, it was stressed that mothers assumed and undertook greater responsibilities for the education of their children compared to fathers, and it was asserted that mothers were more engaged in their parental roles to socialize, educate and rear their children. As a matter of fact, although fathers' interest in education of their children had greatly enhanced (Murdock, 2013), it was pointed out that mothers still spent more time with their children as opposed to fathers (Phares, Fields & Kamboukos, 2009). On that account, it appeared reasonable that mothers' self-efficacy and involvement in socialization, training, and rearing processes were more strongly related to children's academic performance compared to fathers' self-efficacy and involvement.

Researchers and theorists debated the similarities and differences between mothers and fathers regarding self-efficacy and interest in socializing, educating and rearing their children. In consistent and compatible with other studies (Ardelt & Eccles, 2001), the current research discovered associations between the socioeconomic status of the family and the self-efficacy of the parents. Although these associations seemed to be significant for both mothers and fathers, they were stronger for mothers. The results indicated that socioeconomic status had a large overall impact on students' academic performance, and that the indirect effects of socioeconomic status were mediated by parental self-efficacy and parental involvement. These findings were compatible and consistent with results obtained in many previous studies (Chowa et al., 2013; Tazouti & Jarlégan, 2015). Moreover, the study discovered significant relationships between both mothers' and fathers' aspirations and expectations and academic performance of children. This particular result appeared to be compatible and consistent with many previous studies reporting that children whose parents held high educational aspirations and expectations were likely to attain higher academic success as opposed to children with parents who had relatively low educational aspirations and expectations (Davis-Kean, 2005; Yamamoto & Holloway, 2010). Indeed, Jeynes' meta-analysis (2005, 2007) demonstrated that aspirations and expectations of parents were one of the family-related factors that most strongly predicted students' academic performance.

The current research discovered a strong positive relationship between parents' self-efficacy and parental interest, which was again in line with previous research (Brody et al., 1999; Hoover-Dempsey et al., 2001). Although studies indicated that positive relationship between parents' self-efficacy and parental interest for both mothers and fathers, this association was stronger for mothers. Few prior studies tested empirical relationships between parental self-efficacy and parental interest as two concepts. As indicated by Hoover-Dempsey et al. (2001), parental self-efficacy was related to the understanding of the role of parents and could motivate parents to actively engage in education of their children.

As for parental interest, this factor had a positive effect on students' academic performance only for mothers. This result appeared to be compatible and consistent with previous research (Fan & Chen, 2001; Hill & Tyson, 2009). A previous study reported an indirect association between parents' self-efficacy and academic performance of children, with parental self-efficacy influencing students' academic performance through mediation of parental interest (Hoover-Dempsey et al., 2001). In addition, parental self-efficacy was found to be predictive of parental monitoring and interest, which could ensure their students' adapting to school (Shumow & Lomax, 2002). Conversely, the current research did not discover such a connection between parental interest and academic achievement of children as far as fathers were concerned. As shown in Table 1, this might be due to the fact that fathers were less engaged in education of their children than were mothers, or that fathers' interest in education of children was lower than mothers. Further research was needed to test this hypothesis.

The present research investigated a negative association between this variable and academic performance of students regarding time mothers spent to aid their children with homework. This result was compatible and consistent with research indicating that primary school students who found schoolwork and lessons difficult spent more time on homework as compared to students who did not find schoolwork and lessons difficult. Different explanations were made for this negative connection between parents' helping their children with homework and students' academic performance. It was asserted that primary school students who found schoolwork and lessons difficult spent more time on homework than students who did not find schoolwork and lessons difficult. Moreover, parental aid with homework often emerged as a reaction and response to the difficulties experienced by children with schoolwork and lessons (Pomerantz & Moorman, 2010). As for fathers, the research did not find a specific relationship between time they spent homework assistance and children's academic performance. It was necessary to handle these results carefully for the reason that the working hours variable of mothers and fathers was not controlled. This result required more detailed research in the future.

### **Research Limitations**

The current study was tested for both mothers and fathers, and this being the case it was able to find out differences between mothers and fathers with regard to tested theoretical models. Several dimensions of parents' self-efficacy and interest could be investigated simultaneously. Nevertheless, the study had certain limitations. Firstly, the structural model tested on mothers and fathers did not necessarily participate every dimension related to parental self-efficacy and parental involvement. The variables in the study did not include measures such as the quality of practices related to parental monitoring and enforcement of parental rules that could ensure a clearer picture and description of the

relationships between self-efficacy and parental involvement and their eventual influences on students' academic performance. Secondly, the study lacked the instruments to generalize its results so as to include all levels of education. It was stated that the links between parents' self-efficacy, parental interest and educational and academic performance of students cannot be commented in terms of causality. Indeed, as Glatz and Buchanan (2015) indicated, most existing studies were latitudinal and only longitudinal studies were utilized to designate causal relationships.

Future research should pursue at least two directions. First, few studies yielded inconsistent results for parental differences in examining mothers and fathers' self-efficacy and interest (Murdock, 2013; Slagt et al., 2012). Consequently, convergences and divergences between parents should be explored in terms of attitudes and practices related to education and as well as their impacts on students' academic performance. Goodall and Montgomery (2014) attached emphasis on the complexity of relationships between schools and families. Goodall and Montgomery's model perceived educational support of parents as a continuum between the support of parents that the school promoted and the support of parents that emerged directly from the role they assumed as parents. The second direction involved school and family relations. School reforms strived to promote co-education within the school system. Parents were accepted as partners of primary educators and school teachers, and schools attempted to develop active cooperation and partnership with families. Teaching groups called for coherent, consistent and clear actions and a dynamic dialogue with parents to support practices such as socializing, educating and rearing children. These actions can help parents comprehend how schools function and how important education is. Consequently, it will be important to explore and analyze the actions to be implemented by schools and their potential impacts on parental self-efficacy and parental interest.



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# Chapter 6

## **COMPARATIVE ANALYSIS OF THE PERCEPTION OF THE VECTOR CONCEPT BY PHYSICS AND MATHEMATICS TEACHER CANDIDATES**

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## 1. Introduction

Physics and mathematics are disciplines that require an understanding of the relationship between concrete applications and abstract concepts. The concept of “vector”, which occupies a central place in these disciplines, is of critical importance for pre-service teachers in terms of containing both a deep theoretical understanding and practical knowledge. Vectors emerged in the 18th and 19th centuries to express the direction and magnitude of physical quantities. While Hamilton’s quaternions and Gibbs and Heaviside’s vector analysis laid the mathematical foundations for this concept, by the early 20th century, vector calculus had become one of the fundamental tools in mathematics and physics.

In mathematics, vectors are often defined as geometric objects that carry information of magnitude and direction. They are considered one of the fundamental building blocks in fields such as linear algebra, geometry, and analytic geometry (Smith and Smith, 2015). In physics, on the other hand, vectors are used specifically to express physical quantities such as force, acceleration, velocity, momentum, and electric field. In the analysis of these quantities, vectors are indispensable tools for the correct understanding and explanation of phenomena (Jones, 2017). The concept of vectors is considered in different contexts and applications, especially in these two disciplines. In mathematics, vectors are studied in a more abstract approach, mostly in the context of mathematical structures and relationships. In this context, concepts such as vector spaces, linear independence, base vectors, and linear combinations of vectors are important (Brown, 2019). In physics, on the other hand, vectors are often associated with concrete physical systems and phenomena. For example, the direction of a vector can represent the direction of action of a force or the direction of motion of an object (Green, 2018).

Research in the field of education shows that students’ and pre-service teachers’ understanding of the concept of vectors is often superficial and sometimes inaccurate. In particular, misconceptions about the direction and magnitude properties of vectors are common (Özdemir and Clark, 2018). These misconceptions arise as a result of students and pre-service teachers not being able to visualize vectors correctly, distinguishing between mathematical and physical properties of vectors, or interpreting these properties incorrectly. Therefore, it is important to understand the conceptual structures of students.

Conceptual structure is the organized form of individuals’ knowledge and understanding of a particular topic or concept. This structure shows how individuals understand, connect, and apply their knowledge (Novak and Gowin, 1984). Conceptual structures represent depth and complexity in learning processes and are especially critical in teaching complex concepts



(Jonassen, 2006). In education, understanding the conceptual structures of pre-service teachers helps them develop their teaching strategies and better understand students' learning processes (Marzano, 1998).

One of the most commonly used methods to reveal individuals' thoughts about a concept is the independent word association test method. With this test, participants are asked to list the words they associate with a concept, and the relationships between these words are analyzed to reveal conceptual structures (Bahar et al., 1999). This method, which was first used in the field of psychology, later became popular in educational research. The power of the word association test is that it reflects the spontaneous and natural thought processes of the participants (Kinchin, Hay, and Adams, 2000).

The word association test has been used to explore the conceptual understanding of pre-service teachers and students, especially in science and mathematics education. Studies in this field have revealed that pre-service teachers and students often misunderstand or superficially grasp concepts (Tasar, 2003). In the literature, it is seen that studies such as velocity, electric field in physics and function, limit, continuity, geometry, measurement, etc. in mathematics are carried out by using the word association test (Balbağ, 2018; Erdogan, 2017a; Erdogan, 2017b; Turan and Erdogan, 2016; Turan and Erdogan, 2017; Türkkan, 2017). These studies reveal the conceptual structures of the students towards the relevant concepts.

The aim of this study is to examine the conceptual structures of pre-service physics and mathematics teachers regarding the concept of "vector". In particular, the focus of the research is how these pre-service teachers perceive the concept of vector and what are the words they associate with this concept. In this context, the word association test has been used as an effective tool to examine pre-service teachers' understanding of the concept of vector and the origins of these understandings. The results of the research aim to provide important insights to understand how pre-service teachers in mathematics and physics perceive the concept of vectors and how these perceptions can be addressed in educational practices.

## **2. Method**

### **2.1. Research Design**

This study is a qualitative research based on a case study design. The case study pattern is an appropriate approach to examine a complex situation in detail and depth in a real-life context (Yin, 2014). The focus of the research is to explore the conceptual structures of pre-service physics and mathematics teachers regarding the concept of vector. In this context, the case study design provides an ideal framework for analyzing participants' cognitive processes

and conceptual understandings in detail.

## **2.2. Participants**

The participants of the study consist of 60 pre-service physics and 60 mathematics teachers studying at the faculty of education of a university in Anatolia. Participants were selected by random sampling method. This method allows the selection of a sample group representative of the research population so that the results obtained can have a general validity (Creswell, 2013).

## **2.3. Data Collection Tool**

In this study, independent word association test was used as a data collection tool. Participants were given the word “vector” and asked to write down ten words that they associated with this concept. This method is recognized as an effective tool in revealing the conceptual thoughts and conceptual structures of the participants (Novak and Gowin, 1984).

## **2.4. Data Analysis**

The collected data were analyzed by content analysis method. Content analysis enables the systematic review and interpretation of qualitative data, so that the findings of the research become more reliable and valid (Braun and Clarke, 2006). The word lists taken from the participants were compiled after the completion of the data collection process. The collected words were arranged to be suitable for analysis, spelling errors were corrected, and semantically similar words were grouped. The number of times each word is used is counted. These counts were used to determine the conceptual significance of the words and their weight in the minds of the participants. Frequency tables were created separately for both groups. These tables show the distribution of words that pre-service physics and mathematics teachers associate with the concept of vectors. The words given as answers are divided into categories according to thematic similarities. For example, words such as “direction”, “orientation”, and “speed” are included in the category of physical properties and applications. With word clouds, the answer words of both groups were visualized and made more readable. The meanings of the words within each category and how these meanings contribute to pre-service teachers’ perceptions of the concept of vector were examined. In this process, the answers given by the participants were associated with the concept of vector and used to reveal how this concept was perceived by pre-service teachers.

In the data analysis process, the reliability was increased by ensuring the participation of more than one researcher. The findings were continuously compared with the literature and theoretical frameworks and their validity was ensured.

### 3. Findings

Pre-service physics teachers' answers to the key concept of "vector" words and their frequencies are presented in Table 1. Accordingly, the high-frequency response of pre-service physics teachers to the key concept of "vector" is words; direction (f=56), velocity (f=41), magnitude (f=37), orientation (f=30), acceleration (f=30), force (f=28).

**Table 1.** *Physics teacher candidates' answer words about the concept of "vector"*

| Answer Words      | Frequency | Answer Words                  | Frequency  |
|-------------------|-----------|-------------------------------|------------|
| Direction         | 56        | Magnetic field                | 6          |
| Magnitude         | 46        | Mechanic                      | 6          |
| Velocity          | 41        | Line                          | 5          |
| Orientation       | 30        | Electric field                | 5          |
| Acceleration      | 30        | Ray                           | 5          |
| Force             | 28        | Gravitational force           | 5          |
| Physics           | 25        | 3D                            | 4          |
| Location          | 20        | Dimension                     | 4          |
| Momentum          | 17        | Cosine                        | 4          |
| Arrow(sign)       | 16        | Sine                          | 4          |
| Scalar            | 16        | Space                         | 4          |
| Coordinate system | 13        | Vector addition               | 4          |
| Initial point     | 12        | Endpoint                      | 3          |
| Unit vector       | 12        | 2D                            | 2          |
| Vector            | 12        | Area                          | 2          |
| Displacement      | 11        | Plus-minus(positive-negative) | 2          |
| Mathematics       | 10        | Relative motion               | 2          |
| Motion            | 9         | Linear                        | 2          |
| Torque            | 9         | Plane                         | 2          |
| Cross product     | 9         | Geometry                      | 2          |
| Length            | 8         | Impulse                       | 2          |
| Angle             | 6         | Newton                        | 2          |
| Weight            | 6         | Quantity                      | 2          |
| Component         | 6         | Point                         | 2          |
| Resultant vector  | 6         | Directional line segment      | 2          |
| Line segment      | 6         | <b>Total</b>                  | <b>543</b> |

Pre-service mathematics teachers' answers to the key concept of "vector" words and their frequencies are presented in Table 2. Accordingly, the high-frequency response of pre-service mathematics teachers to the key concept of "vector" is words; direction (f=49), physics (f=49), length (norm) (f=46), mathematics (f=28), space (f=27), analytic geometry (f=22).

**Table 2.** *Mathematics teacher candidates' answer words about the concept of "vector"*

| Answer Words         | Frequency | Answer Words               | Frequency  |
|----------------------|-----------|----------------------------|------------|
| Direction            | 49        | End-to-end splicing method | 5          |
| Physics              | 49        | Relative velocity          | 4          |
| Length(norm)         | 46        | Motion                     | 4          |
| Mathematics          | 31        | Velocity                   | 4          |
| Space                | 27        | Euclid                     | 4          |
| Analytic geometry    | 22        | Vector                     | 4          |
| Magnitude (Severity) | 21        | Cross product              | 4          |
| Arrow(sign)          | 19        | Directional line segment   | 4          |
| Line segment         | 18        | 3D                         | 3          |
| Coordinate system    | 17        | Endpoint                   | 3          |
| Geometry             | 15        | Normal vector              | 3          |
| Ray                  | 15        | Formula                    | 3          |
| Line                 | 14        | Linear algebra             | 3          |
| Orientation          | 14        | Matrix                     | 3          |
| Scalar               | 13        | Inverse vector             | 3          |
| Force                | 11        | 2D                         | 2          |
| Initial point        | 10        | Area                       | 2          |
| Unit vector          | 10        | Subspace                   | 2          |
| Resultant            | 8         | Analytical plane           | 2          |
| Parallelogram method | 8         | Subtraction                | 2          |
| Addition             | 8         | Variable                   | 2          |
| Dimension            | 7         | Orientation vector         | 2          |
| Plane                | 7         | Acceleration               | 2          |
| Operation            | 7         | Mixed product              | 2          |
| Location             | 7         | Zero vector                | 2          |
| Angle                | 6         | Abstract                   | 2          |
| Inner product        | 5         | Triangle                   | 2          |
| Point                | 5         |                            |            |
| Translation          | 5         | <b>Total</b>               | <b>552</b> |

When we compare the perceptions of pre-service physics and mathematics teachers about the concept of “vector” based on the data set, it is seen that both groups consider this concept from different aspects. Physics teacher candidates and mathematics teacher candidates produced 543 answer words and 552 mathematics teacher candidates answered the Independent Word Association Test, which was applied to the concept of “vector” stimulus. These answer words were collected in 4 categories common to both groups and these categories are shown in Table 3.

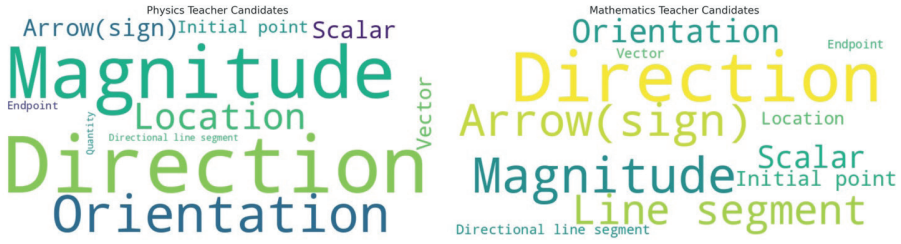
**Table 3.** *Categories created using responses to the concept of “vector” stimulus*

| Categories                     | Physics Teacher Candidates |             | Mathematics Teacher Candidates |             |
|--------------------------------|----------------------------|-------------|--------------------------------|-------------|
|                                | Frequency (f)              | Percent (%) | Frequency (f)                  | Percent (%) |
| Definition and Characteristics | 215                        | 40          | 162                            | 29          |
| Physics Subject                | 193                        | 36          | 74                             | 13          |
| Mathematics Subject            | 89                         | 16          | 261                            | 47          |
| Operations                     | 46                         | 8           | 55                             | 10          |
| <b>Total</b>                   | <b>543</b>                 | <b>100</b>  | <b>552</b>                     | <b>100</b>  |

As a result of the analysis of the data obtained, it was seen that the answer words were collected in the categories of “Definition and Characteristics”, “Physics Subject”, “Mathematics Subject” and “Operations” in both groups. While the answer words of the pre-service physics teachers were mostly collected in the category of Definition and Features (f=215), the answer words of pre-service mathematics teachers were mostly collected in the category of Mathematics Subject (f=261). The answer words of both groups in these four categories were compared through word clouds as follows.

### ***Category 1: Definition and Characteristics***

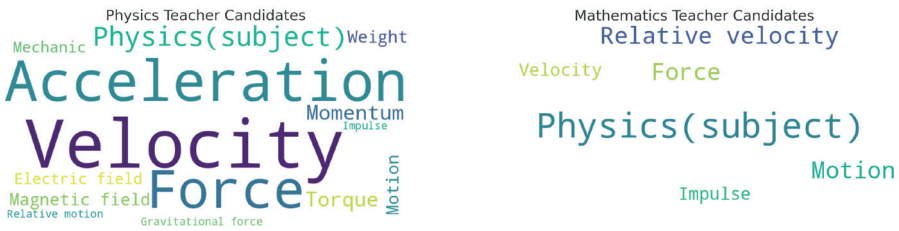
The word clouds of the answer words in the “Definition and Characteristics” category related to the vector concept of pre-service physics and mathematics teachers are as shown in Figure 1. In this category, it is seen that both groups include answer words related to the definition and properties of the vector. In this category, the highest frequency answer words of the pre-service physics teachers were direction, magnitude, direction, position, arrow, while the highest frequency answer words of pre-service mathematics teachers were direction, magnitude, arrow sign, line segment, orientation.



**Figure 1.** Word clouds belonging to the “Definition and Characteristics” category of pre-service teachers of physics and mathematics

**Category 2: Physics Subject**

The word clouds of the answer words of the pre-service physics and mathematics teachers in the “Physics Subject” category related to the concept of vector are as shown in Figure 2. The answer words in this category are related to the physics course and the topics and concepts included in the content of this course. In this category, the highest frequency answer words of the pre-service physics teachers were velocity, acceleration, force, physics, momentum, while the highest frequency answer words of the pre-service mathematics teachers were physics, force, relative velocity, motion, velocity. In this category, it is seen that pre-service physics teachers produce significantly more answer words than pre-service mathematics teachers.

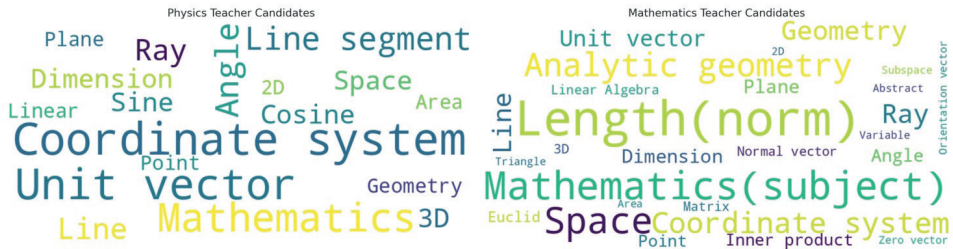


**Figure 2.** Word clouds belonging to the “Physics Subject” category of pre-service physics and mathematics teachers

**Category 3: Mathematics Subject**

The word clouds of the answer words in the “Mathematics Topic” category related to the vector concept of physics and mathematics teacher candidates are as shown in Figure 3. The answer words in this category are

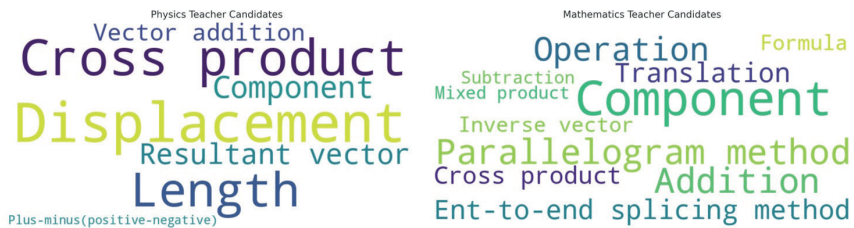
related to the mathematics lesson and the topics and concepts in the content of this course. In this category, the highest frequency answer words of the pre-service physics teachers were in the form of coordinate system, unit vector, mathematics subject, angle, line segment, while the highest frequency answer words of pre-service mathematics teachers were length (norm), mathematics subject, space, analytic geometry, coordinate system. In this category, it is seen that mathematics teacher candidates produce more answer words than physics teacher candidates.



**Figure 3.** Word clouds belonging to the “Mathematics Subject” category of pre-service physics and mathematics teachers

#### **Category 4: Operations**

The word clouds of the answer words of the pre-service physics and mathematics teachers in the “Operations” category related to the vector concept are as shown in Figure 4. In this category, it is seen that both groups include answer words related to the operations performed on vectors. In this category, the highest frequency answer words of the pre-service physics teachers were in the form of displacement, vector product, length, component, resultant vector, while the highest frequency answer words of pre-service mathematics teachers were in the form of result, parallelogram method, addition, operation, end-to-end addition method.



**Figure 4:** Word clouds belonging to the “Operations” category of pre-service physics and mathematics teachers

#### **4. Conclusion and Recommendations**

This study emphasizes that there are significant differences in the conceptualization of vectors between pre-service physics and mathematics teachers. Physics candidates tend to associate vectors with physical properties and applications, and frequently use terms such as “direction,” “velocity,” and “magnitude.” In contrast, aspiring mathematics see vectors as more abstract, with less emphasis on physical applications. These findings underline the different cognitive frameworks nurtured by physics and mathematics education, shaping how pre-service teachers interpret and engage with basic concepts such as vectors.

The research reveals that the concept of vector is understood differently among pre-service physics and mathematics teachers. This disparity reflects the different nature and teaching approaches of the two disciplines. The study emphasizes the importance of acknowledging these differences in pedagogical strategies in order to effectively address the different conceptual backgrounds of pre-service teachers.

Educational strategies should be adapted to address the various interpretations of vectors in physics and mathematics education. For physics teachers, emphasizing the practical applications of vectors can increase understanding, while for mathematics teachers, it may be more beneficial to emphasize abstract and theoretical aspects. Further research is recommended to explore these different perceptions and their impact on teaching methods and curriculum development.

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# Chapter 7

## **METHODOLOGICAL ACTION AS PART OF PROFESSIONAL IDENTITY IN SOCIAL WORK AND ITS EVALUATION WITH HABERMAS**

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## Introduction

The title of this article contains terms that first need to be clarified individually. As soon as one attempted to define the terms of the title, it is clear that there is a tension between the methods of social work as a discipline and methodological action as part of professional identity in social work. This tension becomes a problem when methodological action is decoupled from professional identity. For the description, explanation and evaluation of the terms in detail and of the topic as an unit, there are different traditions in social work according to its genealogy to social movements and epistemologically. Traditions from ethical-religious movements (Pestalozzi, 1922), social democratic movements Natorp ethnic-regional movements like in Nohl, *die pädagogische Bewegung*, on the one hand, philosophical-psychological approaches by Herbart, critical-feminist approaches like Gilligan *Different Voice*, action-theoretical approaches (Winkler, 2017) and systems-theoretical approaches on the other can be named. Each of these approaches contributes to understanding, but also leaves areas neglected. The current situation leaves not only the impression of fragmentation of loose traditions, but also an alienation of no common ground. Expert cultures have emerged that have contributed to the recognition of social work in society as a profession and discipline, but at the same time they have become so disconnected from each other during that that the common space that was taken for granted at the beginning of its development has been pushed to the edge of insignificance. Thus, the task in front of us is to initiate a discourse that is capable of achieving two things at the same time: Firstly, this discourse must accommodate individual concepts in their differentiation and also show a way in which they can continue to specialise in their own logic. Secondly, this discourse must also make plausible the hope of a discursively established, but nevertheless coherent unity, i.e. identity.

## Scientific methods and methodical action

*Scientific methods:* If the thesis of a common (professional) identity is to be made plausible, the components of this identity must be related to each other in a meaningful relationship. To this end, a scientific method can be defined as a reflexive approach that leads to the same results by the same input. Objectivity, reliability and validity can be used here as criteria for the claim to truth. There are *three* scientific methods: normative evaluation, genealogy and comparison. Evaluation is the method of philosophy, religion and morality. They are tautological propositions, such as *thou shalt not kill*, or *act in such a way that the maxim of your will can at all times be regarded as the principle of general legislation*. However, both can only be justified by themselves. This changes with the method of genesis, which is favoured in biology, history, developmental psychology etc. The statement *cats are related to lions* becomes understandable from the logic of genesis. According to the

method of genesis, an embryo can be traced from ontogenesis to a living being or from phylogenesis from the stage of homo sapiens to zoon politikon. Finally, the method of comparison used in the social, human and natural sciences. Example with its opposite: like perfection/decay, dark/light, negative/positive, rich/poor. Comparative political science generates its knowledge by compering government-, party-, justice- and health systems according to most-similar, most-different, or a mixture of both approaches. But they are also other types of comparison, such as the extreme types or two identical cases. Finally, ideal type proposed by Weber. By the method of comparison information is gained that is not even included in evaluation and genesis.

*Methodical action:* The methods of the science must now be distinguished from the methods of the profession as a type of action developed mainly by sociologist like Weber. He defined sociology as a science that attempts to understand social action through interpretation. And Weber understands social action as a category that is related to the behaviour of other subjects in the sense intended by the actor(s) and is oriented towards this in its course (Weber, 1985: 542). Weber starts from a teleological model of action and specifies subjective meaning as an action of intention. An agent can either pursue his own interests, such as acquiring power or wealth, or he can attempt to live up to values such as piety or human dignity, or he can seek satisfaction in living out affects and desires (Weber, 1980: Chapter II, § 2, Habermas, 1981 I: 381). Another type of action proposed by Habermas (1984: 285). He proposes an action model with which he defines instrumental-purpose-rational action as a social action legitimated in the system. Within capitalist system, instrumental, purposive-rational action, strategic action, is permitted, like trying to acquire diplomas or earn money. But within the lifeworld as the sphere of solidarity, it is advisable to make use of communicative action. I will come back to that.

*Methodological action in social work:* Both type of methods are applied in social work and linked with prerequisites on three levels. On a personal level, methodological action refers to the demands that social work imposes on social workers, according to which social workers should transform their personal shortcomings, such as prejudices, lack of competence in terms of knowledge, expertise and communicative qualities, into abilities, skills and expertise in the name of the profession. From this point of view, social work is a biographical work (Bourdieu, 1998). Stating from the study, social work students want achieve certain good ideas concerning identity, society, its functions, structure. They combine these ideas with ethics and morals. These ideas enable them to pursue certain goals in their studies, in the organisations of the internships and in the society. By studying social work, they want to refresh, question and consolidate their knowledge and skills about as many of these aspects of living together as possible, but also abandon them if necessary.

If they succeed in acquiring a wide range of knowledge and skills that help them to act in various (specialised) discourses in a way that is not only sound in terms of professional ethics, but also good from the perspective of anyone who may be affected, then they will not only feel confident that they are studying the right object, but will also have a better insight into their own biography thanks to these reflections. In this case, engaging with others will coincide with engaging with one's own biography and identity (Demir, 2023b). During this process of reflection, they would realise that their choice to study social work is, in Bourdieu's words, linked to their *habitus*, i.e., the self-evident facts that make it easier to make a choice in any decision (Bourdieu, 1998: 41-42). They will learn that their choice of study is also linked to the type of *capital* in their family has. In this respect, professional action at the meso level, at the level of organisations such as families, (high) schools, companies, etc., is linked to the preconditions. Depending on the type of state and government, social work must organise itself differently, seek cooperation with other organisations and gain legitimacy in society on the basis of other institutions. They act without regard to the individual, as Weber put it. Methodological action is linked to the social framework conditions. Methodically action needs laws that are considered correct by legal logic and legitimised by society. Social work thrives best in democracies with welfare state structures that have established a well-developed system of social insurance, for example.

*Structurally predetermined tensions in social work:* Now, even if all this were realised, methodical action does not yet occur. Rather, we can now see that methodological action only emerges as a possibility, as an option, on the basis of these prerequisites; methodological action occurs under structurally predetermined tensions. The first tension lies in the given contrast between heteronomy and autonomy (Kant, 1803: 27). It is about the question of how the educator can guide the adolescent to be educated towards autonomy and self-determination in accordance with his or her own will, ideas, abilities and values. All guidance is heteronomy, which logically stands in opposition to autonomy. At the same time, autonomous subjects achieve their autonomy within the structures of a pre-constituted lifeworld. Subjects can assert their autonomy by first appropriating the norms already established in the lifeworld. A process of being part of community through socialisation occurs in and thanks to the structures of the pre-established lifeworld, for the assertion of which the adolescent subject first of all appropriates them unquestioningly. Only when the process of appropriation has successfully taken place can the phase of criticism, renewal and thus questioning begin. These two processes are set in a temporal, factual and social sequence as well, as they are linked to the individual and social ability to criticise. Thus, methodological action takes place under the precondition of a constantly changing constellation of learning and teaching. Upbringing, education and teaching require a valid

source of knowledge and action. The insights and cognition gained from them are valid if their stability arises from the logic of education (*paideia*) itself. In this case, the realisation of the fallible state of knowledge keeps pace with changes in social requirements and rationalities. Accordingly, society establishes institutions that enable the adolescent to socialise in a way that considers participation, involvement in one's own direction, in one's own interests as a component of stability. This process is characterised by a series of decisions, the stability of which is depends on ambiguities, questions, new requirements and offers.

The second tension is contained in the concept of the *dual mandate*. Social work acts in the triangle of society, client and the profession. Social work provides services for people who need them. But there are also people who want services, even though, on closer inspection, they might not be in need of them at all. Social work fulfils a monitoring function in this process. Consequently, the critical question is to whom is social work obliged? A proper answer can be given in co-operation with other actors. This is because social work services are either financed by taxpayers or by social insurance provided by the previous generation. Taxpayers release social work resources so that clients can be provided with the services they need. In this case, too, the question arises for social work as to whether it should orientate itself to the needs of its clients or to the requirements of society.

The third tension lies in the duality of *emotional intimacy and rational distance*. Social work deals with people who are not always able to defend themselves well, especially as they often come from structurally disadvantaged backgrounds. In practice, this manifests itself in the fact that they may answer questions in the affirmative for strategic reasons. Professionals must have reflected on their own shortcomings, dependencies, needs, etc. in order to be able to respond appropriately when that kind of phenomena arise. This is why Pestalozzi referred to this process as working on the “*verschütteten Selbst*”, buried self (Pestalozzi, 1922: 155). In order to really be able to help, social workers must demonstrate a structured openness towards clients. Social workers must adopt a basic openness and positive attitude towards each case in order to recognise existing resources. Through reflection, experience, exchange, communication with colleagues as well as control of and resistance from colleagues, professionals gain stability and security in their actions - that's why social work as biography work. They must learn that their action should not only be approved by the addressees, but also by their colleagues. Reflective action not only gives social workers a relationship to existing theories, organisations and institutions, but also to their own personality. Depending on the situation, they leave one track or pay attention to the other. A methodical approach is a trial and error method for balancing emotional closeness and rational distance. It does not only specify what is to be done,

but also allows an openness towards what is not yet part of the methodical action. In this respect, reflective social workers are not slaves to their rules. Rather, they behave according to their rules. However, this is not an invitation to break the painstakingly achieved rules. Breaking rules that have been established and harmonised is often a cause for abuse. This raises the question of how rule-breaking can be institutionalised as part of methodical action. There needs to be a justification, a preliminary conscious decision as to why it is appropriate to break the rules in that very case.

### **Professional identity in social work**

*Social:* In order to talk about an identity in social work, we first have to be clear about what *social* and *work* mean. From a comparative perspective, we can associate *social* with anti-social, non-social, asocial etc.. And from a genealogical perspective, the social can be traced back to the line of the polis (state). Polis, i.e. a castle in which wealthy men ruled. It means *spatially united people*. It indicates sociability (journeyman), to community emerged from polis, guilds. They had their own clothes, ethics, even their own judges. “Without the consent of the guilds, no one was allowed to be imprisoned in Münster in the 15th century (...)” (Weber, 1980: 775). Along these lines, the distinction between community and society were transformed first in into the dichotomy of civil society and the kingdoms. Liberalism emerged as the ideology of civil society, the society of the castle, as a form of mediation and communication. On this basis, Max Weber then distinguishes between economy and society.

*Work:* In case of work, the question is what the opposite of *work* is, or what should we compare *work* to? Hannah Arendt answered this question by comparing work with making and action from its genesis. According to Arendt, people in antiquity were characterised by action. In doing so, man must work for his biological preservation. In order to give meaning to his earthly existence, he produces things, which also makes him artistically active. And man displays his art (*poiesis*) in public for admiration. Working and producing are components of human existence. What characterises man as such, however, is not his existence on earth, which he shares with all other animals, but his actions as a political, community-oriented being, which distinguishes him from the other animals. He makes houses, children and wants to strive for perfection by founding a polis. Only in the polis is the human being part of nature, part of the community and part of himself. The basis of action is *Vita activa*, asceticism. In the Middle Ages, the whole thing was changed; the goal was no longer to establish a polis, but to pass the test on earth. The world was seen as transient, redemption as the goal and *Vita contemplativa* as the highest. Asceticism was replaced by mysticism. Working on one’s own destiny became the guiding principle of all actions; through labour homo faber creates the world of things and himself. Pedagogy is



therefore educational work. “Reform pedagogy discovers education through labour.” (Winkler, 2017: 72). In modern times, i.e. in the Age of Enlightenment and instrumental reason, economics, household work became the focus of all activities. Man became an *animal laborans* (working animal). Philosophy loses its connection to politics. God as an absolute reference point leads to the emergence of form of total dominations, and thus to different ideologies. People are normalized to view any deviation from the norm attributed as abnormal or antisocial in the sense of not belonging to society. Mass society, mass consumption, bureaucracy, conformism, and a tendency towards despotism were socialized as part of one’s own identity. There is a return to the castle, which has actually freed itself from social facts through the ideologies.

In this phase, social work becomes an extension of the totalitarian regimes. It takes on a kind of soft control function, for example by being seen as a teaching of the nation considered as unity without social classes. Part of this development is also the new conception of social work as a profession that emerges as a substitute for class. To understand this development, we have to go back to the time of the *First World War*. It is a time of border tensions, devastation, poverty, deportations, forced migrations and wars. To reflect on that development, Horkheimer and Adorno put in their still influential work *Dialectic of Enlightenment* (1947) the question, how did the opposite happen despite all the emancipatory endeavours since the 18th century; how did national socialism, racism and purges in the Soviet Union come about despite the Enlightenment, science, reasoning? How could society be transformed in just a few years to something of dark, hoppelles state of totalitarian regimes? How can these defeat be explained, in the term of emancipation and enlightenment? The answers they found is, that it is instrumental reasoning responsible for these happening. Instrumental reasoning as one component of enlightenment is now turning into myth from within itself. Instrumental action is part of the inner dynamic of Enlightenment thinking. Enlightenment aims to remove fear from people through knowledge. Reasons for this and that are explained in myth with the will of the gods. It rains because gods want it to. Someone is ill or has died because the gods want to affect them. But you can also outwit the gods with good gifts. Reciprocity is part of these exchange. The size of the gift corresponds to the interest of the wish. Through that logic nature is objectified and brought under human laws. Just as nature is ruled over, people are also ruled over. They become objects of domination.

*Identity*: Nations are the organization of this rule. The old identities of friend and enemy are being expanded by new identities based on religion and nation mixed with language and culture in a spatial border that is now also legally defined. The nation state is the organ and organization of this new phase (Demir, 2023a). And the travel document, the passport is the reification of a new identity within this nation of like-minded people. It is precisely in this

phase that the question is asked whether individuals still have to differentiate themselves when they have to define themselves first of all on the basis of race, nation and religion.

The question of identity of individuals put in a new kind of discussion also in this context. In philosophy, the ontological concept of identity is linked to Leibniz's law, according to which two objects are only identical if one entity has the same properties as another entity: A and B are identical if A can be replaced by B without changing the truth or falsity (Hennrich, 1979: 138). Thus, one can be replaced by one, unus, wahin 1, I, ' without any information being lost. But from the perspective of an adolescent the question of identity emerges as a new learning stage. "It has to do with people a, b, c etc., and it is used to associating a name with each person, for example the names 'a', 'b', 'c'. And now the difficulty is to understand that a, when he speaks of himself, says 'I', b, when he speaks of himself, also says 'I', but when a speaks of b, he says 'b', and when b speaks of a, he says 'a'. (...). When the child learns the word 'I', it does not simply learn an equivalent, but a new way of referring to an object." (Tugendhat, 1979: 80) The more the adolescent faces up to these challenges and passes them by applying various strategies, the more likely he is to be able to develop an "inner centre of self-control of individually attributable behaviour" (Habermas, 1994: 439). An adolescent individualises himself through socialisation in accordance with the expectations initially placed on him by his closest caregivers, some of which are (morally/normatively) contradictory. A person's personality is formed by the norms found in society. Individualisation is a personal achievement, but within a pre-structured lifeworld. With Heinrich, we can distinguish identity criteria from identity conditions. While identity conditions are based on differences, identity criteria connect different individuals in one way (Hennrich, 1979: 148).

This concept of identity is on an individual level. If the technology (e.g. fingerprints) had not yet been developed, or the question of how to identify a person arose because, for example, the person was recognised as having dementia, it is the structures of our lifeworld that characterise us, distinguish us and make us who we are. In this understanding of the lifeworld, we are the same on the basis of identity criteria and at the same time different on the basis of identity conditions. Insofar we have to deal with identity not only in logic, but also out of ontogenesis and on the genesis of identity in the community/society (polygenesis). We have to distinguish them from each other, to identify what exactly professional identity is.

In this context, Mead's symbolic interactionism (*Mind, Self and Society*) can be used to distinguish between three phases of identity development (Mead, 1968: chap. III: § 20). The first phase is about *imitation*. Cats imitate other cats, children imitate other people, without a complex thought process. At this stage, Mead categorises communication between animals. For example,

an animal can use its signals to indicate *food* or *danger*. Fighting between two dogs is also at this level. The attack signal of one dog is correctly interpreted by the other dog as a threat, to which it in turn reacts with a counterattack signal (Mead, 1968: 81-82). In the second phase is the *play*. Toddlers try to play the mother, the father, the policeman, the fireman who they see. Secondly, they act as if they were the people being played. Young children have a premonition that this is an act mediated by norms and expectations. This is one reason why we continue to behave towards the teacher as if she is still the teacher, even though we are no longer pupils and she has also retired. Because these expectations are internalised, they continue to have an effect. Finally, there is the *game* phase, in which relationships between several expectations are integrated into one's own role. Role assumptions are no longer experienced directly in one's own lifeworld. Through socialisation, depending on gender, society and expectations, adolescents learn to develop a highly personal attitude in various situations. But they are influenced not only role models like grandmothers, teachers but also by public figures. The own personality is now embedded in the series of personalities that either were, are or are regarded as given in a society, be it in traditional narratives or fictions, but also in the constructions of science, art, philosophy, morality, etc. - one's own perspective is assessed through the eyes of the significant other. Adolescent learns to act symbolically through language. Role taking reoccurs from the perspective of the generalised other. In this phase, people no longer adhere to historical personalities, but to principles. They judge social, subjective, from the perspective of anyone who might be affected, as Habermas would say. It is the perspective of the neuter, the absent third.

When we talk about *identity (in) social work*, we are talking about phenomena precisely in this game phase, developed from the perspective of the neuter. We are talking about a social identity constructed in common within a specific profession. As professionals, we no longer place ourselves in this lifeworld where people know each other well and maintain face-to-face relationships. Rather, as professionals we live in a modern, functionally differentiated society characterised by plurality, diversity and differences in identities. Today there is a multitude of functional identities in line with the functional differentiation of society; professional identities such as craftswoman, politician and scientist. In addition, there are identities that have emerged from art (rocker, hip-hopper), sport (boxer, footballer), and so on. Whichever way we look at it, there is no identity, but identities. Every person is a bundle of rations, feelings, experiences, goals, etc., which are reflected differently in life depending on the given situation.

Personal, political and professional positioning (pppp) leads professions to recognition by the other person, i.e. acceptance of one's own identity in society by different identities. It is therefore advisable to view identity politics,

i.e. the negotiation of conditions for what one can/may/should show of my identity and when one can rightly expect recognition, as a permanent, constantly changing constellation of actors. However, this endeavour must under no circumstances be at the expense of the interests of social work clients. To prevent social work from making this mistake, social work must reflect on its traditions, from which it derives its goals and develops its methods and theories. One question is what criteria, what values social work can use not only to maintain its identities, but also to develop further. There are various answers to this question, on an individual, social and professional level. However, all of these approaches must at some point specify who should and should not belong and why. Indeed, there is no identity that can transcend its own boundaries, permanently, in all cases, to take a just standpoint. Therefore, there is no ethics that is good for everyone. One way of reflecting on and developing professional identity is provided by Jürgen Habermas' discourse ethics (Habermas, 1991). It specifies what kind of inclusion or exclusion, i.e. social inclusion and exclusion, is justified and why. I will come back to the question also later on.

*Profession:* Professions have already been and continues to be described and explained in terms of genesis and comparison, as well as evaluated from an ethical, moral and normative perspective. In all of these approaches, a logical connection is established between vocation, professionalization and profession, either as a historical process in tandem with the functional differentiation of society or as a negotiation process between divergent forces. The negotiation process is in turn explained by systems theory approaches (a) with a claim to power and autonomy and by action theory approaches (b) with the genuinely human attempt to mediate between theory and practice. In the system-theoretical approaches, communication and its complexity as well as its obscuring are at the forefront of the discussion. The question here is whether the discourse on professionalization serves the attempt to increase one's own reputation, relevance and identity (Tenorth, 1990: 83). The discourse has the function of making the discrepancy between the normative claim to autonomy and the given dependence on the resources of society visible and understandable for some and concealing it for others, i.e. institutionalizing it, leading to a paradox (Tenorth, 1990: 89, cf. Luhmann, 1997: 28, 366-375). For Oevermann, it is not about standardization as in Abraham Flexner, or social control as in Parsons, or about power as in Schütze (1996), nor about a stratification substitute but about a working alliance between two types of actors. Oevermann's approach is standing for a rationality that is legitimized by the knowledge and skills acquired in educational institutions of society to empower the actors who are on the other side of the working alliance and seek help for self-help (Oevermann, 1997).

From the genealogy, the term profession can be brought from Latin

*profession* in the sense of a public commitment. In the literal sense, it has the meaning of a male person who makes a vow and thus becomes a member of a religious order or functional guild. Professions can be traced back to voluntary work. In occupation, the actors have a regular income and the succession is institutionalized in a rational way within a certain organization. There is also a standardization of products so that customers can be served with a patent solution. In this context, Talcott Parsons traced the emergence of professions as a form of rationalization by describing the process by which the magician transforms into the physician, psychoanalyst, therapist in the course of social history (Parsons, 1951: 305-8). This line from social power to administrative task fulfilment could also be observed in the transition from king to prophet and to today's president (Demir, 2017: 159).

*Occupation and profession:* According to the logic of comparison started by Abraham Flexner, an activity is considered professionalized when intuition, customs, traditional types of knowledge and action are transformed into reflexive modes of action, into purposeful, complex and standardized procedures. The claim on profession means that the precures are standardized, academized and became independent from other professions. Professions could now subject its instruments to the criteria of effectiveness and efficiency, by being accurate with diagnoses distinguished from advice. Social work should therefore update its body of knowledge (state of the art) and compare it with the body of knowledge from other social sciences (such as sociology, anthropology, educational science, etc.), as well as expand it.

*Specialization approach:* Another approach focuses on specialization. Professionalization is largely considered together with expertism. Experts emerge when the coping strategies and traditional routines fail and no longer help. Accordingly, the functional differentiation of society (science, culture, law, economics, bureaucracy, ethics, etc.) and its differentiation (science: political, economic, legal, educational, social science, etc.) have given rise to corresponding specializations. Each of these specializations has its own language, instruments and modes of action. Specialists that have developed such an expert culture with sufficient internal differentiation can be regarded as professions. They are characterized by the fact that they can dictate their own language to other professions, experts without suffering any damage themselves. Experts can dramatize the existing conditions in a language that is similar to the already established discourses (Tenorth, 1990).

*Mediation of theory and practice:* A different approach was presented by Oevermann, for whom professionalization is about the mediation of theory and practice (1997: 99). Social science is characterized by a reflection that can be observed not only in social scientists themselves, but also in their subject matter. Through the learning process, the state of science and the state of knowledge of the people in whom social science is interested are revised.

There is thus a reciprocal relationship between the state of science in a given society and the state of knowledge of people in the same society. Professions arise in societies where theoretical knowledge in the sense of an intrinsic logical abstraction of rule and morality is put in a communicative action with practical interest. Universities are the places of scientific-methodological discourses freed from the constraints of practice. In them, the question of the relationship between theory and practice could be determined as an object of empirical science, reproduced with its methods and passed on to the next generation through the corresponding discourses and seen in the habitus formation of the professor (Oevermann, 1997: 92-94, 123-133). We can only refer to professionalization when expert culture, expert knowledge, knowledge from universities is not intended for self-success, money, power, fame, etc., but rather with an aim to transfer back into the living world. The end result is a differentiation between social control and the provision of therapy on the one hand and its justification through specialized activities on the other, from which the classical professions (lawyers, theologians and physicians) emerge (Oevermann, 1997: 94). Consequently, it is no longer a question of which characteristics (high autonomy, academy) distinguish professional work from professional action, but rather what exactly produces professional action and motivates it to continue.

The answer is that it is the clients' crisis constellations that are helped to achieve stability with the help of professionals. Mutual trust is required, which the actors cannot give each other on the basis of (self-)experience, unless, paradoxically, they consciously agree to it. It requires a working alliance that is difficult to establish (115). In accordance with Oevermann, we can identify this constellation on three levels. The *micro level* is about the crises of not yet being a mature person. The adolescent, or the person who is still undergoing therapy and is in crisis as a result of the loss of autonomy, wants to face the challenges that arise in everyday life with the help of the profession. At the *meso level*, the focus is on crises within communities, such as companies, clubs, associations, families, neighbourhoods and peer groups. By their very nature, these are addressed by social workers in supervision, coaching, school social workers, etc. At the level of society as a whole, these crises can manifest themselves in the form of deprived solidarity, a crisis of established patterns of orientation, crisis-ridden socialization, social integration, etc. At the *macro level*, it is about crises of meaning and knowledge. Max Weber spoke of professional man without spirit, pleasure man without heart. Durkheim, for his part, identified an anomaly in society. And Habermas speaks of the colonization of the living world. In all these cases, the point is that, in view of the progressive demystification of traditional views of the world and man, as well as rationalization and functional (differentiation) of society, all knowledge and skills have migrated from the lifeworld to the subsystems of society,

which for their part are not interested in communicative understanding or solidarity, but coordinate all actions according to systemic media such as money and power. The more differentiated these subsystems are, the more provincial the lifeworld becomes, as Habermas puts it. Everyday questions about care, raising a child, marriage, buying a new sofa, the next vacation, etc. are decided according to advertisements, as Adorno and Horkheimer noted. Since the old structures of religion and morality have been lost in the face of their disenchantment and rationalization through instrumental action, the Enlightenment, and in view of the fact that secular morality itself is not yet strong enough, a crisis of meaning arises. If the old sources of knowledge (religion, morality) no longer count, but professionalization (scientific, method orientation, etc.) itself is still on its way, this is reflected in everyday life as a crisis in society.

Professional action is crowned with success when they are case-specific. Every viable solution must draw on the resources available in the specific case, which results in a deviation from the general. Professionalism therefore means refraining from patent solutions as a matter of principle. There is a tension; the goal of social work is to help clients gain competence. But direct help can be seen as an encroachment and thus lead to paternalism, transference (from self-diagnosis to diagnosis by others), stigmatization (value judgments), reification or fetishism. That means, that professional action indeed takes place under structural uncertainty. Firstly, this refers to the tension between emotional closeness and rationalized distance in the working alliance, professional action is a contradictory unity of diffuse and specific relationship components (Oevermann, 1997: 152). Therefore, client should be ready for *self-disclosure*. The client may remain *diffuse* in his descriptions, explanations, expectations, wishes, etc. This means that the patient may seek emotional closeness. On the other hand, the professional is under no circumstances obliged to use the client's *self-disclosure* for amusement, personal dramatization or demonstration of power. Professionals are specific in all their actions. This means that professionals must keep their distance. Accordingly, diffuseness and role specificity are mutually exclusive. Diffuseness and/or specificity is an action that is independent of the (ascribed and/or acquired) role and is inherent to the person. They occur wherever people interact with each other. Diffuseness and specificity can only be made to disappear in the absence of social relationships. The category of roles is not a defining feature of the social structure of a society. Instead, also the deviations could be put a life-world language, such as taboo (sexuality) and/or jealousy (Oevermann 1997: 110-114).

### **How to continue**

Professional action takes place under structural tensions. That means, professional identity is not an attempt of immunisation, but an indication of fallibilism and the discursiveness of decision. All identities harbour the

danger of ego-centrism, the danger of justifying everything on the basis of one's own ethics. Of course, there are values, such as human dignity and human rights, which most people find good. The fact is that human rights have also gained their legitimacy through discourse (Demir, 2023a). Apart from a few moral principles, everything is fallible. This is especially true for the social sciences. Since one's own ethics almost always approves of one's own actions, identity runs the permanent risk of self-affirmation - self-affirmation without an empirical reference. The question is therefore, how can social work evaluate its own professional identity? What is the yardstick? This yardstick cannot be the ethics of social work itself. This would lead them to a tautology; the professional identity of social work is good because it corresponds to the ethics of social work. Since social work ethics cannot sit in judgement with itself, it needs another standard of evaluation outside of social work ethics. The question is whether the methods of genesis and comparison can help us, also in this case. What did the world look like before professions emerged?

*Back to the roots:* One possible direction has already been addressed by Adorno and Horkheimer. In her ground-breaking work *Dialectic of Enlightenment* (1947) they observe how logos turns into Mythos. Myths are as a form of mastery of objective and subjective nature of humans in which time, expectation, social rules are structure through repetition and instruments action. The downside is that the more people's knowledge and skills were transferred in to the institutions, the less they trusted themselves. Although today we have depth knowledge in all spheres of human and of all sorts of things, we can hardly utilise this knowledge in everyday life when it comes to problem-solving. When we face (difficult) question, we no longer ask ourselves *who, which of many friends can help me or how can I help myself*, but rather *which office is responsible for my problem?* In doing so, we no longer realise that we are voluntarily turning ourselves into an object. We objectify ourselves, our lives and our values, lose our freedom to act and call this logos or professionalisation. If this analysis is right, the question is than, what's the solution? Back to the village? Back to simplicity, to the state of nature, as Jean-Jacques Rousseau is accused of doing. He wrote; "Man is born free, and everywhere he lies in chains. One considers himself the master of others and yet remains more a slave than they. How did this change come about? I do not know. What can give it legitimacy? I believe I can answer this question." (Rousseau, 2003: 5) He don't propose a return to the state of nature, but a move forward to a society that is organised according to the social contract. In any case, a return to the village, the magician is no longer possible. The rationalisation of the lifeworld has progressed so far that a return to the state of nature would deepen the existing inequalities.

*Habermas' suggestion:* Habermas has another suggestion. He distinguishes between *system* and *lifeworld* on the one hand and between



*communicative action* and *discourse* on the other hand. Inside the *lifeworld* we should act according to the communicative action. When we are in *system*, we need to move in to discourses to find to a reasonable consensus. With *system* Habermas reference is to the reproduction of goods that are important for biological survival, the *realm of necessity* (Marx). The economic sphere functions according to the logic of money. Whoever has the money she may act according to instrumental reasoning. The second area of the system is the state, the bureaucracy with all its subsystems. Here, those who have the power can decide. Just as money is the currency in the economic system, power also has the function of currency in the sense of opening doors. Those who have money and power are there, understand each other, can communicate, are listened to and those who do not have these media are excluded. Those who have these currencies do not need natural language in their communication within the system. On the other side is the *lifeworld*. Here, the actors act the basis of a natural common language for a mutual solidarity, understanding and through shared values and goals. It is the world of people living within a community governed by natural language, traditions, codes and rules. Of course, there are also misunderstandings or manipulations. But structure of *lifeworld* and natural language as the medium of communication motivates people to act communicatively. Instrumental, success-oriented action and manipulative self-behaviour is seen as a parasitic use of language in the *lifeworld*. Communicative action is the norm here.

For the description of the *lifeworld*, Habermas draws on phenomenological, hermeneutical work on the one hand, and on the linguists, Peirce (developed by Morris, Carnap) Frege, Wittgenstein (developed by Davidson and Dummett) Austin, Searle, K. O. Apel on the other. With Rorty's the *Linguistic Turn* (1967), Habermas wants to transform the philosophy of consciousness into a *philosophy of intersubjectivity*. Philosophy on consciousness is an engagement between the philosopher and his subject. The subject can neither speak nor defend himself. They are texts by philosophers who are usually dead. The philosopher of consciousness can now do his best to understand these texts, to enter into communication with the text, as Gadamer had suggested. But he can stop at any time and can decide for himself what he wants to read, not to read or enhance with his criticism. On the other hand, a philosophy of intersubjectivity incorporated into a discourse and open to people who have something to say, something to hide or something to achieve is an uncertain ground (TCA I: 50, 391; TCA I: 129, 141). It is a dialogue between people who are alive. Discourses are in fact an arrangement of people with different points of view, each just as worthy of recognition as the other. The outcome of such a discourse does not depend on the will, consciousness of a philosopher within his own four walls, but on the prerequisites of arrangement and the type of contributions of the participants represented in the discourse.

Habermas prefers to rely on a public use of reason, which he sees only in that kind of *intersubjectivity*. Speaking has a dual character; it is propositional and performative at the same time. Our speech contains built-in claims that everyone who speaks follows or at least recognizes as claims (TCA I: 273-279). It is only a matter of uncovering what is already recognized in our speech. If someone says *I will do my best*, this is not just a statement about the type of personality who he/she is, but it entails also a promise which can then be demanded. Habermas believes that such claims can be found in all speech acts. For this he points to Austin, who distinguishes between locutionary, illocutionary and perlocutionary acts. Locutionary means to say something, illocutionary means to act in saying something and perlocutionary means to bring about something through acting or in saying something (TCA I: 289-295). Agreement rests on common convictions. The speech act of one person succeeds only if the other accepts the offer contained in it by taking (however implicitly) a *yes* or *no* position on a validity claim that is in principle criticisable. Both ego, who raises a validity claim with his utterance, and alter, who recognizes (yes) or rejects (no) it, base their decisions on potential grounds, reasons.

*Discourse:* So, ones more, the question is what to do? In that process, all spheres are being rethought through the medium of rationality, because of different life models, different paradigms of social action, proposals for a better or alternative culture. In these moments, it is part of the logic of modernity that these different options and orientations have to be discussed, argued about and debated. Traditions are now replaced by communicatively achieved understanding (TCA I: 273-339). We are no longer under pressure of time or other constraints. On the contrary, participants have and has to have time entering into an (arduous) dialogue with other participants within a consultation deliberately intended for reflection. In these cases, the participants ask themselves what would be best solution. Habermas calls this type of deliberation, discourse (Habermas 1983: 53-125; 1991: 120-125) and the principles according to which these discourses should take place, the discourse ethics (Habermas, 1991: 152-158; 1996: 50-55).

The whole is based on the assumption of an ideal *speech situation*. What does Habermas mean by that? Imagine participant in a lifeworld are discussing a problem and weighing up the arguments back and forth between several participants. They are aware about the fact that the discourse is not just a matter of weighing up the arguments, but the arguments of all possible competent participants. Of course, there is always a chance that despite all this, the result is terrible. To prevent this from happening, the model provides the following precautions. First of all, the participants could ask, *why did we come to that wrong outcome?* So, participants could check what went wrong. But if there is no objection from the actual participants themselves, they

still have to ask what any reasonable persons could now object to what is now agreed on. They have to broaden their own perspective. The principle for that is called *inclusion* which means, that all those who are potentially competent, who are potentially affected are part of the consideration for that given practical questions. Another requirement is that all participants must have *equal discursive rights*. No power hierarchical structures, such as those resulting from lifeworld or professional status (age, sex, nation, religion ect.) are allowed. In discourse, only *the unconstrained force of the better argument* should apply.

Habermas wants to understand the *lifeworld* as the place of precisely these speech acts. Using the example of the second breakfast, Habermas shows how communication in the lifeworld potentially contains the rationality of the systemic media (money and power), but releases these rationalities for communicative action.

An older construction worker who sends a younger and newly arrived co-worker to fetch some beer, telling him to hurry it up and be back in a few minutes, supposes that the situation is clear to everyone involved—here, the younger worker and any other workers within hearing distance. The *theme* is the upcoming midmorning snack; taking care of the drinks is a *goal* related to this theme; one of the older workers comes up with the *plan* to send the ‘new guy’ who, given his status, cannot easily get around this request. The informal group hierarchy of the workers on the construction site is the *normative framework* in which the one is allowed to tell the other to do something. The action situation is defined temporally by the upcoming break and *spatially* by the distance from the site to the nearest store. If the situation were such that the nearest store could not be reached by foot in a few minutes, that is, that the plan of action of the older worker could— at least under the conditions specified—only be carried out with an automobile (or other means of transportation), the person addressed might answer with: ‘But I don’t have a car.’ (TCA II: 121)

The terms in italics in this quote refer to the instrumental potentials that language makes available to the actors. But a person acting communicatively within the structures of the lifeworld does not misuse the potentials for his own selfish goals. In other words, the lifeworld is the place of natural, unadulterated language use. Action is oriented towards the achievement of mutual understanding. Every process of reaching understanding through the language is an achievement against the background of that tightly woven, culturally ingrained preunderstanding based on customs, traditions and religion. In discourse understanding is reached through the public use of relationality kept in language. By thematising, testing and questioning part of that given background knowledge, linguistic rationalisation affects only that part of the stock of knowledge. If there is a challenge concerning new a

situation than that segment of lifeworld is put in discursive negotiation. To the extent that definitions of a given situations are negotiated by participants *themselves*, this thematic segment of the lifeworld can be not only put in question, but also can generate proper answers for new definition of the situation. If participant of a discourse do act communicatively than there is an option, that they could reach the best solution not only for every participant, but also for all potentially affected.

Habermas claims that all these are not imposed by himself to participants of a discourse, but every right, true, sincere sentence put forward in a language, claims to be right, true, sincere under all conditions, by all languages and culture. That means the person who claims with his speech act something is convinced that no reliable arguments could be made against his claim. Habermas called the structure *general validity claims*, these are *comprehensibility, truth, rightness, truthfulness*. According comprehensibility every argument put forward has to be *comprehensible*, so that every participant can understand what is meant. With every utterance, the speaker makes the claim that what is said can be understood in the situation. This claim is called into question if the speaker and listener are socialised in different languages. In this case, semantic clarification in the sense of hermeneutic interpretation is required. Second the statement made is *true*. Findings, assertions, explanations, cognition, etc. imply a claim to truth, according to which the asserted facts not only exist, but also actually exist in the asserted manner. For that the participant has in case of any challenge to satisfy that the existential presuppositions of the propositional content mentioned are in fact given. On the other, if someone like to question the claim he/she could put a counterargument from the objective world as totality of all entities about which true statements are possible. In that case, an interpretation through teleological action is proper type of action. And *rightness* means that the speech act is right with respect to the existing normative context, or that the normative context is itself legitimate. If anyone wants to question the argument than that person could develop a counterargument from the social world, as the totality of all legitimately regulated interpersonal relations. Every action is here interpreted through normatively regulated action. Finally, *truthfulness* respectively sincerity means that the subject is sincere whit his utterance. All expressive statements, such as feelings, wishes and declarations of intent, imply a partly unspoken claim to truthfulness. All normatively orientated statements such as commands, advice, promises etc. imply a claim to correctness. This is unjustified if the applicable norms on which the statements are based is not held. The base for a counter-argument is the subjective world, as the totality of the experiences of the speaker to which he only has privileged access. Every utterance is subject of interpretation through dramaturgical action (TCA I: 99-100; Habermas, 1995: 81).

These description of the lifeworld, language and communicative action could lead to the conclusion that Habermas probably lives in an ideal world - that he is not realistic. Habermas is aware that the descriptions are counterfactual - he is not describing the world we live in today, but the world we would live in if we had acted according to what Habermas proposes. The world we live in is colonised. With Max Weber, Habermas describes how the lifeworld is disenchanted, rationalized and face colonization (TCA I: 143-273). Rationalization means the fact that ever larger parts of society have been professionalised. During this process of rationalization, specializations and professionalisation special languages arise. Habermas refers to the fact that what happens in science, social work, what we find in art or law, has no longer its seat in the lifeworld without further ado. Action in these spheres needs special knowledge develop by the experts. Professions has been developed, each requiring a special knowledge to understand what exactly each profession has to say. Every profession with own special self-language means a demarcation to the common language, a distancing from the lifeworld. "The more complex social systems become, the more provincial lifeworld become." (TCA I: 172) With every demarcation, knowledge and skills move away from the lifeworld into professionalised areas such as economics, art, science, politics and social work. This in turn leads to impoverishment of the lifeworld (TCA I: 330). Experts can no longer communicate not only with everyday people, but also with each other. This separation of expert cultures from the living world on the one hand, and the splitting off of expert cultures from each other on the other lead to impoverishment of the lifeworld. The potential of understanding-each-other has migrated to the expert cultures. People do not know what to do when problems arise, how to solve them. Although an eminent body of knowledge has been accumulated in the age of reasoning, modernity, enlightenment, this eminent knowledge resides in expert cultures. The world we live in is becoming increasingly defenceless. Thus, we are no longer sure about anything. It is exactly that, what Weber called *specialists without spirit, pleasure-seekers without heart*. Now that the lifeworld is so powerlessly splintered and fragmented, the good, right, best solution comes from outside. Experts, professionals tell us how to do it. This intervention of system in the lifeworld calls Habermas the *colonization of the lifeworld*. Habermas means the assault of system-imperative on the lifeworld through media, such as (TCA II: 332-374). Questions about whom to marry, how and where to live, how to educate children is solved by asking professions. From kindergarten to cemetery, every decision is made specialized logic. Decisions are made not base on a discussion with father, neighbours, friends but according the advises delivered (by media) strategists (TCA I: 327, 345-366).

### **Conclusions**

From comparative view of point, it is logical to note that the very concept of

professionalization indicates that there are moments that have not been solved professionally. Still, our life is full of expert, specialist, professions; there are professions offered in the free market economy (doctor, lawyer, notary) as well as those practised in state-organised and financed organisations (courts and universities). In both cases, the professions enjoy a high degree of autonomy in their decision-making. They have the following characteristics. Firstly, an object is processed according to predefined rules and methods. In this way, coincidences are brought under control and the reproducibility of the results is ensured according to scientific criteria of objectivity, validity and reliability. This also includes the step that all processes, in the words of Max Weber, lead to a principle of equal treatment *without regard to the honour of the person (ohne Ansehen der Person)*. This principle of equal treatment must be applied in accordance with abstract values. Already Aristotle suggested, that equal things should be treated equally according to their equality and unequal things treated unequally according to their inequality. This principle was translated by John Rawls into the principle of equality and difference (Rawls, 1975: 86). Once this demand for equality is recognised in society, it is then a matter of organising oneself according to one's own logic. This self-organisation (guilds, foundations, associations, trade unionists, parties) is a symbol of the autonomy of the profession. Part of this self-organisation is ensuring the reproduction of personnel in training institutions (vocational colleges, universities) and their certification, in Bourdieu's words their ennoblement, in titles of nobility (Bourdieu, 2009: 113). Finally, it is a matter of subjecting theory and practice to the principle of fallibilism. In Habermas' words, this subjects the approval of one's own actions to a discursively achieved consensus that stabilises itself according to the unconstrained force of the better argument.

There are two approaches to conceptualise profession, professionalisation; descriptive and explanatory approach. Descriptive approaches analyse the process of professionalisation by specifying respective characteristics of professions as opposed to occupations. This includes the power-orientated approach, which is based on Max Weber's famous statement that power is the opportunity to assert oneself even against the reluctance of other actors (Weber, WG, § 16). The question is here, against what resistance has the status of the profession been fought for? In comparison, explanatory approaches go one step further in that they focus on the type of actions themselves instead of the phenomena associated with the actions, such as power and standardisation. They aim to explain the meaning of professional action. Profession is the way of acting that is a specific response to the problem to be dealt with. It does not begin with the interests of egoists who are eager to show off, but with the ideas of an approach to solving specific, socially relevant problems. Stylisation is the product and not the goal of professions.

In both cases, professional action is performed under structurally

uncertain conditions. From comparative view of point, it is logical to note that the very concept of professionalization indicates that there are moments that have not been brought to an end, professionally. The uncertainty comes from the fact that there is always another possibility; one could decide one way or another. Mutual trust is required, for which an arrangement is needed. But with an arrangement, there would be still structural tensions not only in professional action, but also in the tension between profession and discipline. *Methodical action* is the attempt to understand subjectively intended action, as Weber demanded. But with Gadamer, understanding can be defined as a translation. What someone else says to me or what an older text presents to me is *eo ipso* not comprehensible. There is a difference between the meaning of the text, the statement and my understanding. Understanding has the structure of translation. Because what is said comes from a different horizon. In order to understand, I have to at least partially transcend or relativise my own horizon, but I do not arrive at a superordinate point of view. Hermeneutics as the method of understanding, helps us to recognise the limits of our own perspective and to reduce its narrow-mindedness. There is a difference between theoretically given possibly of understanding and factual misunderstanding (Gadamer, 1960). These limitations are true also for professional action.

From the point of systems theory, this distinction is seen as an attempt to communicate stability against factual uncertainty based on the parameters of one's own identity. Just as the child finds it difficult to understand that *I* can mean *Hans* but also *Petra* depending on the person, from the perspective of systems theories, social workers seem to find it difficult not only to keep the distinction between *profession* and *occupation* in mind, let alone the fact that forms of de-professionalisation must also be included, but also to constantly distinguishing between *profession* and *discipline*, *theory* and *practice*. Social workers not only want to do, not only practise, but like also to research, i.e. to collect data and evaluate it according to a theory. But the researchers in hard science make fun of the rudimentary *state of research* and the practitioners make fun of the tiny *practice* of social work. They are considered the best researchers or theorists by the practitioners and the real practitioners by the theorists. So, the researchers/theorists think the social workers are the practitioners and the practitioners think the social workers are the researchers/theorists. Put on a neutral basis, there is a certain tension in the professional identity of social workers. Applied practice in the sense of concrete assistance is often devalued in the name of science, theory and modelling research. An either/or option is created and then people are expected to decide on the basis of these predetermined options. But in life there are more than just the two extreme options. Either we allow artificial intelligence (AI) to replace us humans, or we have to ensure that humans and machines complement each other. No, we can define areas where AI can

replace humans and areas where AI complements humans. Instead, we can strive for discourse about a revitalisation of the pre-constituted lifeworld, a world of identities with no need for further explanation for their validity. At the centre of this world is not money or power, but solidarity with one another. It is not about a career, but about a meaningful life plan. We can also approach emerging problems ourselves in the discourses, on the basis of the public use of linguistic rationality, its possibilities of understanding. In this case, it may be about social work renouncing activism (unnecessary interventions), moralisation (the unemployed/young people today etc. are lazy) and exclusion (only people with an EU identity card receive support). In a revitalised lifeworld social work will be in a position to process the principles of its ethics discursively; all principles of social work ethics are useless if they do not regard people as an end. By entering in such a discourse, perhaps it will come to the conclusion that professionalisation harms people. Then we will have to see what to do next. In short, professional action is indeed an essential component of professional identity in social work, but it is not human action per se. Identity-forming action is not only correct, but also morally good and just, if it can apply not only to us as social workers, but also to us as human beings. In this case, the perspective of social work would coincide with the principles developed from the perspective of the neuter. Since all knowledge and understanding is fallible, it is advisable to see the apparently achieved consensus on the profession of social work as a temporary fixed point. No one can ever be quite sure whether everything was considered.



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# Chapter 8

## **WORKPLACE FAVORITISM: ANALYSIS OF CAUSES, CONSEQUENCES, AND MITIGATION STRATEGIES**

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## 1. Introduction

In the intricate web of professional relationships, workplace favoritism stands as a pervasive yet often unspoken phenomenon that can significantly influence the dynamics within an organization. As individuals embark on their professional journeys, they navigate not only the tasks and challenges intrinsic to their roles but also the nuanced social structures that shape their interactions with colleagues and superiors. Workplace favoritism, the preferential treatment of certain individuals over others based on personal connections or subjective criteria, casts a shadow over the pursuit of fairness, equality, and meritocracy in the workplace.

The roots of workplace favoritism are as diverse as the organizations it permeates. It may manifest in subtle gestures, such as exclusive invitations to informal gatherings or private discussions in the office corridors, or more overt actions, such as preferential project assignments, promotions, or salary increases. The consequences of favoritism can reverberate through an organization, eroding employee morale, fostering a toxic work environment, and impeding productivity. Moreover, the perception of an uneven playing field can fuel resentment, leading to increased turnover and hampering the establishment of a cohesive and collaborative workplace culture.

This phenomenon often thrives in the ambiguous spaces between formal policies and unwritten rules, making it challenging to address head-on. While favoritism can emerge from genuine personal affinities, it can also be a symptom of deeper systemic issues, such as organizational culture, leadership styles, or inadequate communication channels. Understanding the multifaceted nature of workplace favoritism is crucial for organizations striving to create inclusive, diverse, and equitable environments where individuals are evaluated based on their skills, contributions, and potential rather than personal connections.

This study on workplace favoritism aims to shed light on the various dimensions of this complex issue. This study will delve into the psychological and sociological underpinnings that contribute to the development of favoritism, examine its impact on both individual employees and the broader organizational climate, and explore strategies for mitigating its negative effects. By fostering awareness and providing tools for effective intervention, this discussion seeks to empower individuals, leaders, and organizations to navigate the challenges of workplace favoritism and cultivate environments that prioritize fairness, transparency, and professional growth for all.

## 2. Favoritism

Favoritism means giving preferential treatment, or displaying partiality in other ways, to one person or group at the expense of another (Mollerstrom,

2022). “Favoritism” is generally a term referring to the preferential or privileged treatment of an individual or a group compared to others. This situation denotes behaviors aimed at providing an unfair advantage or creating a privileged situation in favor of someone. However, the term “favoritism” can sometimes carry different meanings in various contexts, and therefore, its interpretation may vary depending on how it is used in a specific context.

Favoritism, a pervasive aspect of human interactions, has been a subject of extensive academic inquiry across disciplines such as psychology, sociology, organizational behavior, and management studies. Preferential treatment of individuals based on personal biases or affiliations, favoritism can manifest in various contexts, including the workplace, educational institutions, and social settings. This study aims to delve into the multifaceted dimensions of favoritism by drawing upon academic references that contribute to our understanding of its implications, mechanisms, and consequences.

*Psychological perspectives:* From a psychological standpoint, favoritism often intersects with cognitive processes and social psychology. Studies by Jones and Harris (1967) on the fundamental attribution error highlight how individuals may attribute preferential treatment to personal qualities rather than situational factors, perpetuating biases. Additionally, research by Cialdini and Trost (1998) underscores the role of reciprocity and social exchange in shaping favoritism, emphasizing the psychological mechanisms that drive individuals to engage in preferential behavior.

*Sociological considerations:* Sociological analyses of favoritism shed light on its impact on social structures and relationships. Durkheim’s concept of social integration (2005) can be applied to explore how favoritism within groups may contribute to social cohesion or, conversely, generate tensions and divisions. Furthermore, sociologists like Granovetter (1973) have explored the role of weak ties in networks, examining how favoritism might shape social capital and influence opportunities within communities.

*Organizational behavior and management:* In organizational settings, favoritism can significantly impact workplace dynamics, employee morale, and organizational culture. The work of Podsakoff et al. (2007) emphasizes the role of leadership in cultivating a fair and just work environment, with favoritism posing a potential threat to employee trust and commitment. Moreover, research by Cropanzano and Mitchell (2005) explores the broader implications of organizational justice, suggesting that perceived favoritism can undermine overall perceptions of fairness within a workplace.

*Educational context:* Within educational institutions, favoritism can manifest in various ways, impacting student-teacher relationships and academic outcomes. Hattie and Marsh’s (1996) meta-analysis on teacher-

student relationships highlights the importance of positive teacher-student interactions but warns against the detrimental effects of favoritism on student motivation and performance. Understanding the dynamics of favoritism in educational contexts is crucial for fostering an equitable learning environment.

In conclusion, the term “favoritism” encompasses a rich array of dimensions that have been explored through diverse academic lenses. Psychological, sociological, and organizational perspectives contribute valuable insights into the mechanisms, consequences, and potential mitigations of favoritism. By synthesizing knowledge from various academic references, we gain a comprehensive understanding of favoritism’s pervasive nature and its implications for individual well-being, interpersonal relationships, and societal structures. Further research in this domain remains imperative for developing strategies to address favoritism and promote fairness in diverse settings.

### 3. Types of Favoritism

In academic literature, researchers have delved into the multifaceted nature of favoritism, identifying distinct types that occur in interpersonal, organizational, and societal settings. This study aims to explore and discuss some prominent types of favoritism, drawing upon academic references to provide a comprehensive understanding of this pervasive social phenomenon.

*Nepotism:* Nepotism is a type of favoritism that involves the preferential treatment of family members, particularly in professional or organizational contexts. Nepotism can manifest in organizational settings through biased hiring practices, where individuals with familial ties or personal connections are given preferential treatment in recruitment processes (Pfeffer & Fong, 2002). Nepotism also poses a significant challenge to diversity and inclusion efforts within organizations. When hiring decisions are influenced by personal relationships rather than qualifications, the workforce may become homogenous, stifling creativity and limiting the organization’s ability to adapt to diverse perspectives (Heilman, Block, Martell, & Simon, 1989).

According to researchers implementing diversity and inclusion initiatives that prioritize equal opportunities for all employees can also contribute to breaking the cycle of nepotism within organizations (Cox & Blake, 1991).

*In-Group Favoritism:* Social identity theory posits that individuals tend to favor members of their own social groups over outsiders. This concept, known as in-group favoritism, has been extensively studied in psychology and sociology (Tajfel & Turner, 1979). Researchers argue that in-group favoritism can contribute to intergroup conflicts and may perpetuate inequality within societies. The presence and magnitude of intergroup discrimination in artificially induced or naturally occurring groups

exhibit substantial heterogeneity across individuals and are dependent on a broad range of economic, cultural, and political factors (Li, 2020). Chae, et al., (2022) state that the propensity for favoritism towards one's own group intensifies in situations where the well-being of group members is impacted by constraints on available resources.

Social Identity Theory provides a foundational framework for understanding in-group favoritism. According to this theory, individuals categorize themselves and others into social groups based on shared characteristics, leading to the development of a sense of belonging and identity within these groups. In-group favoritism arises as a natural consequence of social categorization, as individuals seek to enhance their self-esteem by positively differentiating their group from others (Tajfel & Turner, 1979). Tajfel and colleagues (1971) demonstrated that even arbitrary and minimal groupings could elicit in-group favoritism. This suggests that the mere existence of social categories, regardless of their substantive basis, can trigger biased behaviors in favor of the in-group.

*Clientelism:* Within political and economic contexts, clientelism refers to the exchange of goods, services, or benefits in return for political support. Eisenstadt and Roniger (1984) discuss clientelism as a form of favoritism deeply embedded in political systems, where politicians provide personal favors to individuals or groups in exchange for loyalty and votes. Clientelism takes on diverse forms in different cultural and political environments. In some cases, clientelistic networks are deeply embedded in the socio-political fabric, becoming an integral part of the political landscape. Latin American countries, for example, have long grappled with clientelistic practices where political leaders establish personalized relationships with constituents to secure votes and maintain power (Scott, 1969). Contrastingly, in some African nations, clientelism may be driven by ethnic or tribal affiliations, where leaders leverage communal ties to build networks of political support (Wantchekon, 2003). The variations in clientelistic practices highlight the importance of understanding local dynamics and historical contexts when analyzing these relationships.

While clientelism may serve as a means for marginalized groups to access resources, it poses significant challenges to democratic governance. The exchange of favors for political support often results in corruption, undermining the principles of accountability and transparency. Additionally, clientelism can perpetuate inequality, as resources are unevenly distributed based on political loyalty rather than need (Magaloni, 2006). Addressing clientelism requires comprehensive strategies that address both the supply and demand sides of patron-client relationships. Strengthening institutions, promoting civic education, and implementing anti-corruption measures are

crucial steps towards mitigating clientelistic practices (Kitschelt & Wilkinson, 2007). International organizations and scholars play a vital role in researching and advocating for policies that promote democratic governance while curbing the detrimental effects of clientelism.

*Cultural Favoritism:* Cultural favoritism occurs when certain cultural or ethnic groups are systematically favored or disfavored within a society. Studies on multiculturalism and diversity management (Cox, 1994) emphasize the importance of addressing cultural favoritism to build inclusive environments and promote social cohesion. Experiencing inequality tends to increase support for redistribution, but this support is conditional on the redistribution favoring native-born citizens. This reinforces the prevalent belief that native citizens should have priority in receiving welfare and exacerbates the disparity in support between native and immigrant populations (Magni, 2021).

The roots of cultural favoritism can be traced back to historical, social, and economic factors. Scholars like Bourdieu (1979) argued that cultural capital, comprising knowledge, skills, and cultural practices, is unequally distributed in society. As a result, certain cultures are elevated, while others are marginalized, creating a framework for favoritism. Additionally, Hobsbawm and Ranger (1983) emphasize the role of invented traditions in constructing cultural hierarchies, contributing to the perpetuation of favoritism.

Cultivation theory (Gerbner et al., 1986) posits that repeated exposure to specific cultural elements in media leads to the acceptance and internalization of those elements. Thus, media becomes a powerful tool in either challenging or reinforcing cultural favoritism. Research by Hall (1980) underscores the importance of media representation in shaping cultural identities, shedding light on the subtle ways in which favoritism is perpetuated.

The educational system, as a reflection of societal values, can inadvertently contribute to cultural favoritism. Nieto (2000) discusses the concept of “cultural imperialism” in education, where dominant cultural norms are imposed, sidelining the rich diversity of students’ backgrounds. This one-size-fits-all approach can marginalize certain cultural practices, perpetuating favoritism and hindering the development of an inclusive educational environment. Cultural favoritism is not solely an institutional issue; it permeates everyday social interactions. The concept of “othering” (Said, 1978) highlights the tendency to view cultures outside the mainstream as exotic or inferior, reinforcing favoritism. By acknowledging and challenging these ingrained biases in interpersonal relationships, societies can work towards dismantling cultural favoritism at a grassroots level.

*Workplace/Organizational favoritism:* Organizational favoritism refers to the situation where individuals within an organization receive unfair



preferential treatment in favor of or against a particular group. This may occur in terms of opportunities such as promotions, rewards, and training opportunities (Bratton & Gold, 2001). Workplace favoritism occurs when individuals receive preferential treatment, such as promotions, assignments, or recognition, based on personal relationships rather than merit or performance. This phenomenon can manifest in various forms, ranging from subtle biases in decision-making to overt and exclusive practices that create an uneven playing field within the organization (Cropanzano et al., 2016).

When certain individuals consistently receive preferential treatment, it can create a sense of injustice and erode trust among colleagues (Podsakoff et al., 2007). This, in turn, may lead to decreased job satisfaction, lower levels of engagement, and increased turnover intentions among employees who perceive the workplace as unfair and biased (Aryee et al., 2007).

#### **4. Causes of Workplace Favoritism**

Workplace favoritism, also known as preferential treatment or nepotism, is a pervasive issue that can have detrimental effects on organizational culture, employee morale, and overall productivity. This phenomenon occurs when individuals in positions of authority show biased treatment towards certain employees, often based on personal relationships or non-job-related factors. Understanding the causes of workplace favoritism is crucial for organizations seeking to foster a fair and inclusive work environment.

Numerous factors contribute to the emergence of favoritism within organizations. Social exchange theory (Blau, 1964) posits that relationships and personal connections often play a pivotal role in the workplace. Social Identity Theory posits that individuals categorize themselves and others into social groups, leading to in-group favoritism. When managers identify more closely with specific employees, they may unconsciously exhibit favoritism (Tajfel & Turner, 1979). Moreover, leader-member exchange (LMX) theory (Graen & Uhl-Bien, 1995) highlights the significance of leader-subordinate relationships, which can inadvertently result in preferential treatment. The LMX Theory emphasizes the quality of relationships between leaders and subordinates. Favoritism can arise when leaders establish better relationships with certain employees, leading to preferential treatment (Graen & Uhl-Bien, 1995).

*Lack of transparent policies:* One of the primary causes of workplace favoritism is the absence of clear and transparent policies related to promotions, rewards, and recognition. When organizations fail to establish and communicate objective criteria for evaluating employee performance, subjective judgments may prevail. Academic research by Adams (1963) on equity theory highlights the importance of fairness in organizational settings,

emphasizing that employees compare their inputs and outcomes to those of others.

In the absence of transparent policies, favoritism can flourish, leading to resentment among the workforce. Not implementing transparent and merit-based evaluation systems, providing clear communication about decision-making processes, and offering training programs on diversity and inclusion can trigger favoritism (Elangovan & Shapiro, 1998).

*Inadequate leadership training:* Leadership plays a pivotal role in shaping organizational culture and ensuring fair treatment of employees. However, leaders may inadvertently engage in favoritism due to a lack of training in people management skills. A study by Bass (1985) underscores the significance of transformational leadership, which emphasizes fairness and equity, in creating a positive work environment. Inadequate leadership training may contribute to biased decision-making, favoring certain individuals based on personal connections rather than merit.

Leaders are often involved in promotion and recognition decisions. If these processes are perceived as fair and merit-based, it contributes to a positive organizational climate (Yukl, 2010). Conversely, if leaders show favoritism in promotions or recognition, it can lead to dissatisfaction among employees.

*Organizational culture and values:* The culture and values upheld by an organization can significantly influence the prevalence of favoritism. Research by Denison (1990) suggests that organizations with a strong emphasis on values such as transparency, fairness, and equality are more likely to mitigate favoritism. In contrast, a culture that tolerates or even encourages nepotism may perpetuate an environment where personal connections hold more weight than professional competence. Research by Cropanzano et al., (2016) suggests that organizational culture, particularly its adherence to moral principles, significantly influences perceptions of workplace fairness.

*Communication Breakdown:* Effective communication is essential for preventing workplace favoritism. When there is a breakdown in communication between leadership and employees, misunderstandings and rumors can contribute to perceptions of favoritism. Research by Downs and Hazen (1977) emphasizes the role of communication in reducing organizational conflict. Regular and transparent communication channels can help dispel notions of favoritism and promote a culture of openness and fairness. Han (2020) states that when there are no open communication channels in organizations, rumors and gossip emerge informally and this leads to some organizational problems, including favoritism.

*Personal bias and unconscious prejudices:* Individual biases, whether conscious or unconscious, can significantly impact decision-making processes. Research by Greenwald and Krieger (2006) highlights the existence of implicit biases that can influence judgments and evaluations. Organizations need to implement diversity and inclusion training programs to raise awareness about unconscious biases and promote unbiased decision-making, thereby reducing the likelihood of favoritism.

Addressing the causes of workplace favoritism requires a multifaceted approach that encompasses transparent policies, leadership training, organizational culture, effective communication, and the mitigation of personal biases. By proactively addressing these factors, organizations can foster an environment that values merit, fairness, and equal opportunities for all employees. Academic research provides valuable insights into these causes, offering a foundation for evidence-based interventions to combat workplace favoritism and cultivate a more inclusive workplace.

## **5. Consequences of Workplace Favoritism**

Workplace favoritism, the practice of showing preferential treatment to certain individuals over others, has been a longstanding issue in organizational settings. This phenomenon can have profound consequences on both individuals and the overall workplace environment.

Research indicates that the consequences of workplace favoritism are far-reaching and encompass various aspects of organizational dynamics. High-quality work relationships, a key factor in employee satisfaction (Wayne et al., 1997), are compromised when favoritism undermines the perceived fairness of promotions and resource allocation. Organizational trust, as discussed by Mayer et al. (1995), is also significantly eroded in environments where favoritism is perceived, leading to diminished employee commitment and increased turnover. Correlations between collectivism, familism, uncertainty avoidance, and power distance revealed positive associations with both favoritism and nepotism/cronyism. Conversely, institutional collectivism, future orientation, and trust exhibited negative correlations with favoritism and nepotism/cronyism (Im & Chen, 2020). It is also concluded that favoritism has a detrimental impact on job embeddedness, procedural justice, distributive justice, and interactional justice (Arici, et al., 2021).

*Negative impact on employee morale and motivation:* Studies have consistently demonstrated that workplace favoritism significantly undermines employee morale and motivation (Jones, 2018). When employees perceive that promotions, assignments, or recognition are bestowed based on personal relationships rather than merit, it can lead to feelings of injustice and decreased motivation to excel.

Workplace favoritism can result in a significant decline in morale among employees who perceive unfair treatment. When certain individuals receive preferential treatment, others may feel undervalued, demotivated, and disengaged. This can lead to a decrease in overall productivity and hinder the achievement of organizational goals (Robbins & Judge, 2019).

*Reduced employee engagement and productivity:* Favoritism fosters a toxic work environment characterized by a lack of trust and collaboration (Organ et al., 2014). Employees who feel excluded or overlooked are likely to disengage from their work, resulting in decreased productivity and an overall decline in organizational performance. Lasisi, et al., (2022) clarified that favoritism tends to introduce stratification and division within the workplace, creating distinct workplace climates for those who benefit from it compared to those who do not. The study of Guerrero (2023) explored the impact of observing leaders exhibiting favoritism in the workplace on an unfavorably treated employee's job satisfaction, perception of leadership, organizational commitment, group identity, and engagement in counterproductive work behaviors. Moreover, workplace harassment and favoritism have a statistically significant impact on staff performance (Arubayı & Eruvbedede, 2022).

Favoritism can disrupt team dynamics, as it may lead to the formation of cliques within the workplace. This can hinder effective collaboration and communication, negatively impacting the overall performance of teams. In the long run, this can impede innovation and hinder the achievement of collective goals (Podsakoff et al., 2007). Favoritism, nepotism and cronyism are seen as essential factors leading to conflicts of interest rooted in personal gain. This broader corruption phenomenon encompasses potential conflicts, decision-making under such conflicts, and the creation of corrupt connections within the state mechanism (Tytko, et al., 2020).

*Erosion of trust and organizational culture:* Trust is a crucial component of a healthy workplace culture (Mayer & Gavin, 2005). Workplace favoritism erodes trust by creating perceptions of bias and unfairness. As demonstrated by studies on organizational culture (Denison, 2018), a lack of trust can contribute to a negative organizational culture, hindering innovation and collaboration.

Trust is a cornerstone of a healthy workplace culture. Favoritism erodes trust by creating a perception that promotions, assignments, and rewards are not based on merit but on personal relationships. This erosion of trust can damage the organizational culture, fostering a sense of cynicism and resentment among employees (Eisenbeiss & Boerner, 2013).

*Increased turnover and talent drain:* Research by Cable and Edwards (2004) and Cascio (2018) highlights a strong correlation between workplace

favoritism and increased employee turnover. When employees feel their contributions are undervalued or that career advancement is based on favoritism rather than merit, they are more likely to seek opportunities elsewhere, resulting in a talent drain for the organization.

Employees who experience unfair treatment may be more likely to seek opportunities elsewhere. High-performing individuals who perceive a lack of recognition or equal opportunities may leave the organization, leading to a talent drain. High turnover rates can disrupt team dynamics, hinder knowledge transfer, and incur significant recruitment costs (Bauer & Erdogan, 2019).

*Legal and ethical ramifications:* Beyond its impact on employee well-being, workplace favoritism can lead to legal and ethical challenges for organizations (Cropanzano et al., 2017). Discrimination lawsuits and damage to corporate reputation are potential consequences that organizations may face when favoritism is perceived as violating equal employment opportunity principles. Ethically, favoritism undermines principles of fairness and equality. It erodes trust among employees, creating a perception of unfairness in the distribution of opportunities and rewards. This erosion of trust can have a lasting impact on the organization's reputation (Greenberg, 1990).

*Meritocracy erosion:* Favoritism can also manifest as the erosion of meritocratic principles, wherein individuals receive preferential treatment based on factors unrelated to their qualifications or achievements. Research by Castilla and Benard (2010) highlights how subtle biases in hiring and promotion decisions can undermine the meritocratic ideals of organizations.

In many professional environments, the importance of networking and personal connections cannot be overstated. While networking itself is not inherently problematic, the prevalence of nepotism and favoritism in hiring and promotion processes has raised concerns about the erosion of meritocracy. Rivera (2015) sheds light on how individuals from privileged backgrounds leverage social networks to secure prestigious positions, thereby perpetuating inequality. One of the pillars of a meritocratic society is an equitable education system that provides equal opportunities for all. However, socioeconomic disparities in access to quality education have widened, hindering the ability of individuals from less privileged backgrounds to compete on a level playing field (Chetty, et al., 2018).

## **6. Mitigation Strategies**

Organizational favoritism, also known as workplace favoritism or nepotism, refers to the practice of showing preferential treatment to certain individuals within an organization based on personal relationships rather

than merit or qualifications. This phenomenon can have detrimental effects on employee morale, job satisfaction, and overall organizational performance.

To address workplace favoritism, organizations must adopt proactive strategies informed by the latest research. Transparent organizational policies, as advocated by Cropanzano et al. (2017), can serve as a foundation for fairness in decision-making processes. Training programs, drawing on social identity theory (Tajfel & Turner, 1979), can raise awareness about unconscious biases and promote a culture of inclusivity.

*Clear and transparent policies:* Establishing clear and transparent policies is crucial in mitigating organizational favoritism. Academic literature emphasizes the need for organizations to have well-defined policies that outline expectations for fair treatment, equal opportunities, and consequences for violating these principles (Greenberg, 2016). By clearly communicating expectations, organizations can set the foundation for a workplace culture that values meritocracy over personal relationships.

*Ethical leadership:* Leaders play a pivotal role in shaping organizational culture. Ethical leadership, characterized by fairness, integrity, and transparency, can significantly reduce instances of favoritism (Brown & Treviño, 2006). Leaders who demonstrate a commitment to ethical behavior set an example for employees and contribute to a culture where decisions are made based on merit rather than personal connections. Offering leadership development programs may enhance the skills of managers and supervisors in managing diverse teams. These programs should focus on promoting inclusive leadership, emphasizing fairness, and cultivating an environment that values all employees equally (Avolio & Gardner, 2005).

*Objective performance evaluation:* Implementing objective performance evaluation systems is crucial for minimizing favoritism. Research suggests that organizations should adopt transparent and data-driven performance appraisal processes (Murphy & Cleveland, 1991). By incorporating measurable criteria and standardizing evaluation procedures, organizations can ensure that promotions, rewards, and recognition are based on actual performance rather than personal biases (Murphy & Cleveland, 1991).

*Training and awareness programs:* Organizations can benefit from implementing training and awareness programs to educate employees and leaders about the negative consequences of favoritism. Such programs can help foster a culture of inclusivity and diversity, promoting the importance of merit-based decision-making (Chatman & O'Reilly, 2016). Additionally, training can raise awareness about unconscious biases and equip employees with the tools to recognize and address favoritism in the workplace.

Organizations should implement training programs that raise awareness about the detrimental effects of favoritism and provide guidance on building a culture of fairness and equality. Sensitization sessions can help employees recognize their own biases and promote empathy and understanding among team members (Greenwald & Krieger, 2006).

*Employee feedback mechanisms:* Establishing effective feedback mechanisms provides employees with a platform to express concerns and report instances of favoritism. Implementing 360-degree feedback mechanisms can provide a more comprehensive view of an employee's performance, reducing the likelihood of subjective judgments (Murphy & Cleveland, 1991). Research indicates that organizations with open communication channels are better equipped to address and rectify issues related to unfair treatment (Whitener, 2001). Regular surveys, suggestion boxes, and confidential reporting systems can empower employees to voice their concerns without fear of reprisal. Establishing confidential channels for employees provides feedback on workplace dynamics, including concerns related to favoritism. Actively seeking and addressing feedback demonstrates a commitment to creating a fair and open work environment (Ashford & Cummings, 1983).

Mitigating organizational favoritism is a multifaceted challenge that requires a comprehensive approach. By implementing clear policies, fostering ethical leadership, adopting objective performance evaluation systems, conducting training programs, and establishing effective feedback mechanisms, organizations can create a fair and inclusive work environment. The integration of these strategies, informed by academic research, can contribute to a workplace culture that values merit and professional growth over personal connections, ultimately enhancing overall organizational effectiveness.

## **7. Conclusion**

In conclusion, the exploration of workplace favoritism reveals a complex and pervasive phenomenon with far-reaching implications across psychological, sociological, organizational, and educational contexts. This study has delved into the multifaceted dimensions of favoritism, examining its causes, consequences, and potential mitigation strategies.

Psychological perspectives have uncovered the intersection of favoritism with cognitive processes and social psychology, highlighting the role of attribution error and social exchange in perpetuating biases. Sociological analyses, drawing on concepts such as social integration and weak ties, have elucidated the impact of favoritism on social structures and relationships. Organizational behavior and management studies have emphasized its significance in workplace dynamics, employee morale, and organizational

culture. Educational contexts, too, have not escaped its influence, affecting student-teacher relationships and academic outcomes.

The identified types of favoritism, including nepotism, in-group favoritism, clientelism, and cultural favoritism, further underscore the diverse manifestations of this phenomenon. Each type presents unique challenges and consequences within different societal and organizational settings. The causes of workplace favoritism, ranging from social exchange dynamics and leader-member relationships to the absence of transparent policies and communication breakdowns, illuminate the complexity of this issue. Furthermore, personal biases and unconscious prejudices play a significant role, contributing to biased decision-making processes. The consequences of workplace favoritism are profound and extend beyond individual dissatisfaction to impact organizational culture, trust, and productivity. The erosion of employee morale, engagement, and motivation, coupled with increased turnover rates and legal challenges, highlights the urgency of addressing favoritism in the workplace. Mitigation strategies proposed in this analysis offer a roadmap for organizations to navigate this intricate issue. Clear and transparent policies, ethical leadership, objective performance evaluation, training and awareness programs, and effective feedback mechanisms collectively contribute to fostering a fair and inclusive work environment.

In moving forward, organizations must recognize the imperative of addressing favoritism not only as an ethical concern but also as a strategic necessity for sustained success. By integrating evidence-based interventions informed by academic research, organizations can create a workplace culture that values merit, fairness, and equal opportunities for all, ultimately enhancing individual well-being and organizational effectiveness. Further research in this domain remains crucial for refining strategies and ensuring ongoing progress in mitigating the pervasive impact of favoritism across diverse settings.



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# Chapter 9

## **TEXTVERSTEHEN IM FREMDSPRACHENUNTERRICHT**

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## Einleitung

Im vorliegenden Beitrag sollen einige Überlegungen zur Förderung von Textsortenkompetenz im Rahmen des fremdsprachlichen Leseunterrichts dargelegt werden, in welchen die textsortenorientierten Lesestrategien als wichtige Komponente einer allgemeinen Lesekompetenz angesehen werden (Kruse, 2010). Das Hauptaugenmerk soll hierbei auf der großen Potentiale der Kochrezepte liegen, die für den Einsatz im Fremdsprachenunterricht- insbesondere für das Leseverstehen- zu erschließen sind. Hierauf soll ein Unterrichtsvorschlag erarbeitet und vorgestellt werden.

Für die Herstellung der sozialen Beziehungen und kulturellen Werte impliziert das Kochen und Essen eine starke symbolische Bedeutung (Wierlacher, 1993:3). Ebenso kann diese gesellschaftliche Bedeutung des Kochens als Ausgangspunkt, Inhalt und als vermittelndes Element für unterschiedliche sprachliche Lernaktivitäten zu Nutze gemacht werden. Ausgehend von diesen Überlegungen erweist sich das Kochrezept als Textsorte als äußerst vorteilhaft für den Einsatz in didaktisierter Form mit Ideen im Fremdsprachenunterricht, zumal die Sprache sich durch Schlichtheit kennzeichnet und einfach verständlich sowie übersichtlich präsentiert vorkommt (Cölfen, 2007). Die einfach formulierten sowie kurz und prägnant gefassten Texte wirken sich auf das Textverständnis vorteilhaft aus (Dürscheid, 2016). Das fremdsprachliche Lesen soll unter anderem die Lerner dazu befähigen, die Textinformationen auf Wort-, Satz- und Textebene zu entschlüsseln und gemäß dem intendierten Lesezweck das extrahierte Wissen in angemessener Weise zu nutzen.

## Leseverständnis und Textmerkmale

Es gibt eine beträchtliche Anzahl von Textmerkmalen, die das Textverständnis erschweren oder erleichtern. Die typographische Textgestaltung wie die Schriftgröße, die Schriftart mit den festgelegten Proportionen und der gewählten Textfarbe spielen neben der Wortwahl und den Satzlängen eine entscheidende Rolle auf der Grundlage von textuellen Oberflächenmerkmale.

Langer, Schulz von Thun und Tausch (1974) haben die Eingliederung zur Textverständlichkeit wie folgt zusammengetragen:

- einfache Ausdrucksweise (allgemein bekannte, vertraute Wörter, Erläuterung von Fremdwörtern, angemessene Satzlänge),
- logische Folgerichtigkeit im Rahmen einer übersichtlichen Gliederung,
- knappe und präzise Darstellung des Leitgedankens,



- wörtliche Rede, überschaubare, lebensnahe Beispiele die den Leser zum Mitdenken anregen).

Texte haben einen hinweisenden und mitteilenden Charakter worin sich eine Anhäufung von sprachlichen Formen befinden. Dies lässt den Schluss zu, dass ein Text nicht nur aus aneinander gereihten, gekoppelten Satzfolgen besteht, sondern vielmehr dem Leser einen Handlungsraum darbietet in welchem die kommunikative Absicht sichtbar wird (Brinker, 2005:16). Durch die Herstellung der kommunikativen Beziehung zwischen dem Schreiber und Hörer gelten Texte im gesteuerten Fremdsprachenunterricht also zunächst vor allem als Medien des Lernens.

### **Kochrezept als Textsorte**

Im vorliegenden Beitrag wird der Fokus auf die Instrumentalisierung des Themas *Kochen und Backen* für die Förderung einer kommunikativen und grammatikalischen Kompetenz im Sprachunterricht gelegt. Entscheidend hierbei ist die Frage, wie mit der Behandlung von Kochrezepten im Fremdsprachenunterricht über sprachstrukturelle Ebenen eine Übersicht dargestellt werden kann so dass sie erlernbar sind.

#### Zutaten und Zubereitung des Gerichtes

Der zentrale Teil des Kochrezeptes besteht aus der Beschreibung wie das Gericht zubereitet werden soll. Dies geschieht in chronologischer Reihenfolge für das Gelingen des Rezepts. Die Durchnummerierung der Absätze worin sich eine Reihung von Anweisungen befinden stellt den übersichtlich gestalteten Arbeitsschritt vor.

Innerhalb des Textes findet sich eine Reihung von Anweisungen weshalb die Kochrezepte als instruktive Texte bezeichnet werden.

Zunächst werden die Zutaten in der Reihenfolge aufgezählt, wie diese während der Zubereitung angemessen sind. Darüber hinaus werden die benötigten Mengen durch Zahlen und die Gewichtsangaben in Gramm (g), Milliliter (ml) oder Liter (l) wiedergegeben. Andere erforderliche Mengenangaben werden durch Bezeichnungen oder Abkürzungen wie z.B. Esslöffel (EL), Teelöffel (TL), Stück, Bund, usw. dargestellt.

Für ein interkulturell angelegten Fremdsprachenunterricht empfiehlt Roche folgendes Methodikmodell (2001: 175):

#### Die Motivierungs- und Aktivierungsphase:

- Formulierung und Einordnung der ersten Reaktionen auf die möglichen Einstellungen die das Thema hervorruft.

- Aktivierung des Vorwissens bezüglich des Themenfelds
- sprachliche Fragen wie Inhalt und Ausdruck bearbeiten
- Die thematische Differenzierungsphase:
- Eingrenzung des Themas zu einer bestimmten Perspektive
- Förderung zu einer weiteren Exploration
- Die strukturelle Differenzierungsphase:
- Bearbeitung der Aufgaben durch Auswahl von verschiedenem Hilfsmittel, die zu der vertiefenden Kenntnis zum Thema dienen.

Die Expansionsphase:

- Abgrenzung zu der thematischen Angebotspalette
- inhaltliche Auseinandersetzung mit dem Thema
- Vergleiche ziehen und Reflexionen veranlassen um den nötigen Impuls zu geben
- Die Integrationsphase:
- Gegenüberstellung des erlangten Wissensniveaus zu einer anderen Perspektive, so dass weitere Denkanstöße und anregende Diskussionen den Unterricht bereichern können.

Diese Phasen des interkulturellen Sprachunterrichts lassen sich gut mit der Struktur von Didaktisierung der Kochrezepte verbinden.

Im Rahmen einer Unterrichtsplanung kann zunächst Vorgaben und Zielsetzung für die Verfassung eines Gerichts aus der Ausgangskultur in die Zielsprache gegeben werden. Hierfür würde sich das Rezept für die türkische Eierspeise Menemen gut eignen, zumal sie sich schnell und einfach zubereiten lässt und den Lernern die inhaltlichen Aspekte des Kochrezepts bereits vertraut sind. Dieses Gericht liefert nämlich einen köstlichen Beitrag zum typisch türkischen Frühstück und wird wegen der hohen Beliebtheit in jedem Haushalt regelmäßig serviert. Bei solch einer Unterrichtsreihe wird das stärkere Gewicht auf die sprachliche Vorbereitung von Lernenden gelegt.

### **Unterrichtsreihe**

#### **Lernziel:**

Ein nicht didaktisiertes türkisches in der Zielsprache Deutsch verfassen und präsentieren können.

*Sprachliche Mittel:*

- Wortschatz zum Themenbereich erarbeiten
- Nomen und Adjektive (Utensilien und Geräte, Zutaten)
- Verben (zubereiten und kochen)

*Grammatik:*

- Imperativ
- Infinitivkonstruktionen
- Modalverben
- trennbare Verben, usw.

*Wortschatzarbeit:*

Die Erarbeitung und Übung des Wortschatzes hat eine übergeordnete Stellung in dieser Unterrichtsreihe. Die Vokabeln lassen sich vom jeweiligen Rezept extrahieren. So wird bei der Zubereitung einer Suppe *zum Kochen bringen*, beim Plätzchen *goldbraun backen* usw. erläutert.

Für die türkische Eierspeise Menemen kann der nötige Wortschatz folgendermaßen erarbeitet werden:

Arbeitsmaterialien: Pfanne

Zutaten: Paprikaschote, Zwiebel, Eier, Tomate, Olivenöl, Salz, Pfeffer  
Fladenbrot

Mengenangaben: Stück (Stk), Prise, Esslöffel (EL), Scheibe (Schb)

Verben: schälen, in Würfel schneiden, in Spalten schneiden, waschen, (Öl) erhitzen, (Zwiebeln) anschwitzen, (Hitze) reduzieren, verkochen, würzen, anrichten

Adjektive: glasig sein, saftig sein

I. Arbeitsanweisungen für das Schreiben eines Rezepts in der Zielsprache:

1. Du möchtest Menemen kochen. Folgende Zutaten und Utensilien brauchst du:

Paprikaschote, Zwiebel, Eier, Tomate, Olivenöl, Salz, Pfeffer Fladenbrot

Für die Zubereitung des Menemen werden folgende Zutaten benötigt:

3 Stück Paprikaschoten, \_\_\_\_\_, \_\_\_\_\_,  
\_\_\_\_\_, (...)

2. Trage die fehlenden Wörter richtig in die Lücken ein:

Paprika -Zwiebel - geschnitten- Würfel- - Tomate- erhitzt- verkocht-  
Eier- Salz- würzen –

schneiden

Zuerst wird die \_\_\_\_\_ geschält und ganz fein \_\_\_\_\_. Auch die  
\_\_\_\_\_ werden in

kleine \_\_\_\_\_ geschnitten. Die \_\_\_\_\_ in Spalten \_\_\_\_\_.  
In einer Pfanne wird das Olivenöl \_\_\_\_\_ und die Zwiebeln darin  
angeschwitzt. Die Paprika wird dazugegeben. Hitze \_\_\_\_\_ und Tomate  
dazugeben. Wenn die Flüssigkeit \_\_\_\_\_

ist \_\_\_\_\_ dazugeben. Mit \_\_\_\_\_ und Pfeffer \_\_\_\_\_.

3. Innerhalb des Textes verschiedene Satzanfänge passend zum  
temporalen Adverbien einsetzen.

*anfangs, zuerst, zunächst, anschließend, später, dann, danach, endlich,  
schließlich, zuletzt, vorher, nachher*

Zuerst wird die Zwiebel geschält und ganz fein geschnitten.  
\_\_\_\_\_ werden die Paprikaschoten in kleine Würfel geschnitten.  
\_\_\_\_\_ werden die Tomaten in Spalten geschnitten. \_\_\_\_\_  
wird in einer Pfanne das Olivenöl erhitzt und die Zwiebeln darin  
angeschwitzt. \_\_\_\_\_ wird die Paprika dazugegeben. \_\_\_\_\_  
Hitze reduzieren und Tomate dazugeben. Wenn die Flüssigkeit  
verkocht ist Eier dazugeben. \_\_\_\_\_ wird mit Salz und Pfeffer  
gewürzt.

Die Lernenden entnehmen Wissensbestände aus den auditiven und  
schriftlichen Texten, um im weiteren Verlauf ihre Sprachkompetenzen  
auszubauen und mit diesen weiterzuarbeiten. Das durch Rezeptoren  
angeeignete Wissen verflechtet sich somit mit den produktiven Fertigkeiten.

Im Rahmen der produktiven Fertigkeiten sollen die Lerner schriftliche  
und/ oder mündliche Sprachmaterialien erzeugen. Diese erzeugten Inhalte  
sollen grammatisch, lexikalisch und semantisch möglichst korrekt formuliert  
werden. Diesen Äußerungen werden neue Inhalte gekoppelt, die die Schüler  
durch bereits bekannte Strukturen verbinden. Die rezeptiven und produktiven  
Fertigkeiten bedingen also einander.

Je nach dem Leseinteresse und Intention des Lesers wird zwischen verschiedenen Lesestilen differiert. Die Typologie hinsichtlich des Lesestils wird nach Westhoff (1999) folgendermaßen aufgelistet:

1. Detailliertes Lesen
2. Suchendes Lesen
3. Globales Lesen
4. Sortierendes Lesen

**Detailliertes Lesen** auch als totales Lesen benannt – dient zur Erfassung der inhaltlichen Deutungen soweit sie für die Leseintention relevant sind. Dem Text inhärenten Informationen sind wichtig und sie sollen Schritt für Schritt gelesen und wahrgenommen werden, um einen gewissen Vorgang richtig nachvollziehen oder gar durchführen zu können. Bei solchen Lesetexten handelt es sich häufigerweise um Kochrezepte, Spielanleitungen, Bauanleitungen, usw.. Eine für das Kochrezept Menemen- Rührei türkischer Art könnte die Aufgabe hinsichtlich des detaillierten Lesens folgendermaßen gestaltet werden:

Wie wird Menemen- Rührei zubereitet? Lies den Text und trage die einzelnen Schritte zusammen

Rezept für Menemen (siehe Anhang)

*Aufgabenstellung:*

Trage bitte die einzelnen Schritte für den Prozess der Zubereitung zusammen:

1. Die Zwiebeln schälen und fein schneiden
2. ....
3. ....
4. ....
5. ....
6. ....
7. Das Menemen genießen. Guten Appetit!

**Globales Lesen** verschafft dem Leser die Hauptinformationen des Textes nachzuzeichnen. Dem Text sind bestimmte allgemeine also globale Informationen enthalten und im Zuge des kursorischen Lesens indem er den

Text überfliegt wird es dem Leser ermöglicht über den Inhalt eine ungefähre Vorstellung aufzubauen. Hier wird beispielsweise der Anfang und das Ende des Textes gelesen und die dem Leser wichtig erscheinende Informationen aufgenommen. Bei der Aufgabengestaltung bezüglich des globalen Lesens werden auf Inhaltsunabhängige Fragen zum Text fokussiert. Nachfolgend soll für das globale Lesen ein Vorschlag für eine typische Aufgabe dargelegt werden, welche sich auf das herangezogene Kochrezept bezieht. Hier wird aber die Überschrift des Kochrezepts bewusst ausgelassen damit es die Lerner nach dem globalen Lesen sich die Überschrift ausdenken können.

*Aufgabenstellung:*

Lies den Text und beantworte dann die Fragen.

Kochrezept für Türkisches Menemen (siehe Anhang)

*Fragen zum Text:*

1. Finde eine passende Überschrift.
2. Magst du dieses Rezept? Würdest du das gerne essen?
3. Zu welcher Mahlzeit würde deiner Meinung nach dieses Gericht passen? Warum?
4. Würdest du dieses Gericht mit Zwiebel oder ohne Zwiebel mehr mögen?
5. Mache eine kurze Recherche über ein ähnliches Rührei-Gericht, das in Deutschland gerne gekocht wird.

**Suchendes Lesen** veranlasst den Leser nach seiner Leseintention relevanten Informationen zu suchen, diese selektieren (daher als selektives Lesen bezeichnet) und aufzunehmen. Hier gilt es nach erforderlichen Informationen im Textinhalt schnell zu finden. Die konkrete Erfassung eines bestimmten Textteils oder -inhalts ist hier von Bedeutung und nicht die gesamte Textaussage. Beispielsweise extrahiert der Leser von einer Spielanleitung den Mindestanzahl der Personen welche für die Ausführung des Spiels notwendig ist. Bei einem Bericht über einen vollendeten Sportwettkampf sucht vielleicht der Leser je nach seinem Interesse gezielt nach dem Ergebnis des Spiels. Die folgende Aufgabenstellung in Bezug auf das bereits behandelte Kochrezept kann den Rezipienten über das selektive Lesen veranlassen gezielt nach bestimmten Informationen zu suchen:

*Aufgabenstellung:*

Lies den Text und beantworte dann die Fragen.

Kochrezept für Türkisches Menemen (siehe Anhang)

Fragen zum Text:

1. Was soll zuerst geschält und fein geschnitten werden?
2. Was soll in Spalten geschnitten werden?
3. Wo soll das Olivenöl erhitzt werden?
4. Wann wird die Tomate dazugegeben?
5. Worin wird Menemen zubereitet?
6. Womit wird gewürzt?

**Sortierendes Lesen** dient zur Festhaltung der inhaltlich relevanten Zusammenhänge je nach der Wichtigkeit des Lesevorhabens. Diese inhaltliche Abhängigkeit wird vom Leser nach einer inhaltlich organisierten, hierarchischen Rangordnung nachvollgezogen. Sortierendes Lesen wird auch als orientiertes Lesen kennzeichnet weshalb der Leser vorrangig nach den für seine Leseabsicht wichtige Informationen orientiert und eigentlich aus der Synthese des globalen, detaillierten und suchenden Lesens besteht. Vorerst sichert der Leser durch das sortierende Lesen ein gesamtes Bild über die inhaltliche Struktur, was einer Relevanzprüfung entspricht und im nächsten Schritt legt er fest welche Passagen im Text ausführlicher und genauer aufzunehmen sind.

Zum sortierenden Lesen lassen sich folgende Aufgabenstellungen erarbeiten lassen:

- Eine im Text häufig auftretende Wortverbindung oder einen Begriff aufsuchen und zusammentragen.

- Eine bestimmte im Text vorkommende Ausdrucksweise kennzeichne und durch Synonyme, oder bedeutungsähnliche Wörter substituieren.

- Den im Text zugrundeliegenden herausarbeiten und diesen in zwei Sätzen wiedergeben. (Zutaten von Tomaten, Paprikaschoten, Zwiebeln unter der Rubrik Gemüse zusammenfassen oder die verschiedenen Verben wie hacken, fein schneiden, in Würfeln schneiden, in Spalten schneiden grob unter hacken oder schneiden zusammensetzen.

- Die verschiedenen Gesichtspunkte im Text ausfindig machen die

wiederholend im Text immer wieder auftreten.

### **Typologien zur Übung im fremdsprachlichen Lesen**

In der Didaktik des Fremdsprachenunterrichts sind diverse Formen von Übungstypologien zum Lesen vorzufinden. Wie bereits erwähnt wurde, stützt sich die vorliegende Arbeit an der Typologie von G. Westhoff, welcher zwischen den folgenden Aufgabentypen zum Lesen unterschieden hat:

- Übungen in Form von Fragestellungen
- Aufgaben zum Testen und Bewerten
- Andere strukturbedingte Aufgabentypen
- Übungen zur Aktivierung des Vorwissen oder der Motivation

### **Frageübungen**

Zu den meisten vorliegenden Übungsformen zur Lesefertigkeit sind die sogenannten Fragen zum Text vorzufinden. Hierbei werden zwischen zwei Typen der Fragen zum Text unterschieden ( Westhoff, .....; Röche, ...):

1. Die vom Inhalt abhängende Fragen, die sich nur konkret auf das inhaltliche Textgeschehen konzentrieren.

2. Solche Fragen die mit Inhalt nicht zusammenhängen und die praktisch bei jedem beliebigen Text aufgeworfen werden können.

### **Aufgaben zum Testen und Bewerten im fremdsprachlichen Lesen**

Zu dieser Gruppe der Aufgaben zum Lesen zählen wir solche Formen, dessen primäres Ziel im Bereich der Leistungsmessung und Verständniskontrolle liegt.

Für die Leistungsmessung und Kontrolle zum verstehenden Lesen werden folgende Aufgabestellungen gewählt:

- Mehrfachauswahl Übung (Multiple-Choice)
- Richtig / falsch und Ja / nein Übung
- Lückentext

### **Mehrfachauswahl Übung (Multiple Choice)**

Bei sogenannten Multiple Choice- Aufgaben (Mehrfachauswahl) hat der Leser mehr als zwei vorgegeben Antwortmöglichkeiten aus welchen er den richtigen auszuwählen hat.



Für den herangezogenen Kochrezept-Text kann folgende Mehrfachauswahl Übung formuliert werden:

1. Die Paprika werden.....
  - a) ganz fein geschnitten.
  - b) in Spalten geschnitten.
  - c) in Würfeln geschnitten.
2. Zuerst kommen in die Pfanne....
  - a) die Zwiebeln
  - b) die Eier
  - c) die Tomaten

### **Richtig-falsch / ja – nein Aufgabe**

Bei dieser Aufgabenform muss der Leser je nach dem Textinhalt eine Entscheidung treffen ob die vom Autor dargelegte Aussagen, Behauptungen oder Argumente mit „richtig-falsch“ oder mit „ja-nein“ zu beantworten sind. Im Gegensatz zum Multiple Choice Verfahren, wird dem Leser hier nur zwischen zwei möglichen Antworten dargeboten.

Im Rahmen des behandelten Kochrezepts können sich folgende Richtig-falsch / ja – nein Aufgabenformulierungen ansatzweise erarbeiten lassen:

1. In einer Pfanne wird das Olivenöl erhitzt und gleich mit Salz und Pfeffer gewürzt

Richtig/ Falsch

2. Sobald die Flüssigkeit verkocht ist, Zwiebeln dazugeben und in der Pfanne anschwitzen

Richtig/ Falsch

3. Zwiebeln in der Pfanne anschwitzen bis sie glasig sind.

Ja/ Nein

4. Wenn die Zwiebeln glasig angeschwitzt sind kommen die Paprika dazu.

Ja/ Nein

## Lückentext

Innerhalb des Lückentexts lässt der Verfasser vom ganzen Text manche Wörter oder Wortverbindungen aus. Der Leser soll die fehlenden lexikalischen Elemente im Sinn- und Bedeutungszusammenhang des Texts wieder in Text einbetten. Für das Beispiel Kochrezept kann ein Lückentext folgenderweise gestaltet werden:

Zuerst wird die Zwiebel \_\_\_\_\_ und \_\_\_\_\_ geschnitten. Auch die Paprika werden in \_\_\_\_\_ Würfel \_\_\_\_\_, nachdem sie gewaschen und vom Kerngehäuse befreit wurden. Die \_\_\_\_\_ wird mit einem Messer oder dem \_\_\_\_\_ geschält und in \_\_\_\_\_ geschnitten. So kann man gut die Kerne \_\_\_\_\_ und das restliche \_\_\_\_\_ klein schneiden. In einer Pfanne wird das Olivenöl \_\_\_\_\_ und die \_\_\_\_\_ darin angeschwitzt. (...)

Die vorangehenden Ausführungen haben ansatzweise zu skizzieren versucht, wie die Arbeit mit Kochrezepten eine Reichweite von Möglichkeiten für die Sprachreflexion bietet, wenn die passende Strategie und Übungstypologie herangezogen wird.

## SCHLUSSFOLGERUNG

Im Rahmen des vorliegenden Beitrags wurden unterschiedliche Themenbereiche zur Lesefertigkeit angenähert. Hier war es besonders wichtig zu akzentuieren, wie die Textarbeit im Fremdsprachenunterricht gestaltet werden kann, welche Techniken bei der Wortschatzarbeit sowie beim Leseverstehen helfen können und welche Übungstypologie passend dazu ist. Hierbei wurde der Versuch unternommen das fremdsprachliche Lesen in seiner Basistheorie kurz zu umreißen um danach konkrete Aktivitäten und Übungen zu beschreiben. Hier gilt es Strategien zu fördern und die Sprachkompetenz der Lernenden, ihre Wahrnehmung sprachlicher Hinweise und Strukturen zu verbessern. Die vorgeschlagenen Aktivitäten werden durch Anwendung auf konkretes Textbeispiels (Kochrezept) illustriert.

Um die Textarbeit und Leseverstehen im Fremdsprachenunterricht unter einer interkulturellen Perspektive zu untersuchen, wäre das Heranziehen von Kochrezepten als Paralleltexen von Ausgangs- und Zielsprache von Vorteil.

## LITERATURVERZEICHNIS

Textbeleg:

URL-1: <https://www.gutekueche.at/tuerkisches-menemen-rezept-11903> (Stand: 05.12.2023)

Brinker, K. (2005). *Linguistische Textanalyse. Eine Einführung in Grundbegriffe und Methoden*. Bielefeld

Cölfen, H. (2007). *Vom Kochrezept zur Kochanleitung: Sprachliche und mediale Aspekte einer verständlichen Vermittlung von Kochkenntnissen*, in: Unikate: Berichte aus Forschung und Lehre: Essen im Blick - Ein interdisziplinärer Streifzug 30, Essen, S. 84-93, hier: S. 85.

Dürscheid, C. (2016). *Reflexion über Sprache im DaF-Unterricht – am Beispiel von kleinen Texten*. In: Freudenberg-Findeisen, Renate (Hrsg.): *Auf dem Weg zu einer Textsortendidaktik*. Hildesheim: Olms (= Duden Thema Deutsch Bd. 13), 167–184

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## ANHANG

### **Kochrezept: Türkisches Menemen**

Zutaten für 2 Portionen

- 3 Stk Paprikaschote
- 1Stk Zwiebel
- 2 Stk Eier
- 1 Stk Tomate (groß)
- 1 EL Olivenöl
- 1Prise Salz
- 1 Prise Pfeffer
- 1 Schb Fladenbrot

Zeit: 15 min. Gesamtzeit -15 min. Zubereitungszeit

Zubereitung

1. Zuerst wird die Zwiebel geschält und ganz fein geschnitten. Auch die Paprika werden in kleine Würfel geschnitten, nachdem sie gewaschen und vom Kerngehäuse befreit wurden.

2. Die Tomate wird mit einem Messer oder dem Schäler geschält und in Spalten geschnitten. So kann man gut die Kerne entfernen und das restliche Fruchtfleisch klein schneiden.

3. In einer Pfanne wird das Olivenöl erhitzt und die Zwiebeln darin angeschwitzt. Sobald sie glasig sind kommen die Paprika dazu und werden mit gebraten.

4. Hitze reduzieren und die Tomate dazugeben. Diese sollte so saftig sein, dass das Gemüse nun im eigenen Saft garziehen kann. Ansonsten etwas Wasser oder Brühe dazugeben.

5. Die Eier werden verquirlt und zum Stocken in die Pfanne gegeben, sobald die Flüssigkeit verkocht ist. Mit Salz und Pfeffer gewürzt auf Fladenbrot anrichten.

Quelle: <https://www.gutekueche.at/tuerkisches-menemen-rezept-11903>



# Chapter 10

## **EXPLORING TECHNOLOGY INTEGRATED PERSONALIZED LEARNING APPROACHES IN SCIENCE EDUCATION: AN EXAMINATION OF EMERGING TRENDS AND EFFICACIES**

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## **Introduction: Science education and technology**

The combination of science education and technology offers a powerful synergy, striving to offer students more efficient, engaging, and tailored learning experiences. The complex nature of scientific fields, combined with the swift progress of technology, highlights the growing importance of their convergence. This article examines the merging of science education and technology to investigate how this collaboration can improve students' comprehension and use of science.

The function of technology in science education largely centers on improving student-centered experiences and customizing the learning process. Virtual labs and simulations provide students with real-world experiences in a secure and controlled setting, assisting in understanding abstract concepts (Scherer & Wiberg, 2018). Additionally, the rise of individualized learning platforms permits tailoring content to match the particular needs and abilities of each student. Adaptive systems empower students to advance at their own speed, cultivating a more profound comprehension of concepts. Interactive educational tools have the potential to enhance science education and increase student engagement (Haidabrus, 2022; Saltan, Türkyılmaz, Karaçaltı, & Bilir, 2018).

Animation, augmented reality applications, and online interactive lessons motivate students to actively explore subjects, making the learning process more dynamic. Distance learning is instrumental in overcoming geographical obstacles and offering equitable educational access to students from various locations. Virtual classrooms enable students to engage with peers and educators, facilitating their integration into the scientific community (Potkonjak et al., 2016). Integrating technology into the assessment process is essential for more efficient evaluation of student performance and offering timely feedback to educators. Online tools for assessment are beneficial in gauging students' comprehension levels and enhancing the learning experience.

## **Understanding Personalized Learning**

Personalized learning is an approach that tailors instruction to meet the unique needs, interests, and preferences of individual learners (Saltan et al., 2018). By leveraging technology, personalized learning can be implemented on a wider scale, providing adaptive and tailored instruction to students.

Personalized learning is an educational strategy that customizes the delivery of instruction, content, and speed of learning to accommodate each student's unique needs and preferences (Jemadi, 2021). This approach acknowledges the varying learning styles, strengths, and areas for growth

among students. At its essence, personalized learning moves away from the conventional uniform approach in favor of establishing a more student-centered and adaptable learning atmosphere.

In a personalized learning environment, students can advance through the curriculum at their individual pace. This flexibility allows them to explore challenging subjects more thoroughly while moving ahead quickly in familiar areas. Technology frequently plays a crucial role in personalized learning by offering adaptive software, online materials, and data analysis to monitor and assess each student's progress individually (Tang, Chen, Li, Liu, & Ying, 2019; Tetzlaff, Schmiedek, & Brod, 2021). These resources enable teachers to customize instruction using current information, addressing particular learning needs and providing specific assistance. Furthermore, personalized learning empowers students to take ownership of their learning journey (Tetzlaff et al., 2021)

Moreover, personalized learning highlights the importance of student choice and independence. It often involves granting students a level of control over their learning journeys, allowing them to choose projects or subjects that resonate with their individual interests. This method nurtures a feeling of ownership and drive as students recognize the significance of their studies in relation to their personal objectives and ambitions.

In personalized learning environments, collaboration is an essential component. Educators act as facilitators, assisting students in establishing objectives, tracking their advancement, and providing assistance when necessary (Dumont & Ready, 2023; Mirari, 2022). Encouraging peer-to-peer collaboration also allows students to learn from each other, exchange perspectives, and collaborate on joint assignments. As a result, personalized learning fosters not only academic growth but also critical thinking skills, problem-solving abilities, communication aptitude, and collaborative spirit.

### **The Role of Technology in Personalized Learning**

Technology plays a crucial role in enabling personalized learning. The integration of technology is crucial in the execution and achievement of personalized learning, revolutionizing conventional educational frameworks into individualized and dynamic experiences for every student (Kaminskienė & Khetsuriani, 2019; Tang et al., 2019). An important aspect of technology's role is its capacity to offer customized learning platforms. These platforms utilize advanced algorithms and data analysis to evaluate each student's advancement, recognize their preferred learning methods, and tailor content accordingly. This customization guarantees that students access materials suited to their skill level, promoting an individualized and optimized learning experience. Additionally, personalized one-to-one learning has been found to

significantly benefit students compared to traditional educational methods (Latham & Carr, 2015; Zheng, Long, Zhong, & Gyasi, 2022).

In addition, technology enables the development of varied and interactive learning materials. Digital content, virtual simulations, and online resources provide students with a range of formats to interact with the curriculum (Schmid, Pauli, Stebler, Reusser, & Petko, 2022). This multimedia method not only caters to diverse learning styles but also enhances the dynamic nature of the learning process. By utilizing e-learning systems and personalized learning software tools, students can engage with interactive content that is tailored to their specific needs and preferences. This method ensures a more individualized approach to learning, accommodating different learning styles and rhythms while supporting the unique aspirations of each student.

The use of technology in personalized learning also promotes collaboration and communication. Online platforms allow students to work together on projects, exchange ideas, and participate in discussions outside the traditional classroom setting. This connection fosters a community atmosphere and broadens the learning environment beyond the school's physical boundaries.

Furthermore, technology is a valuable asset for monitoring and analyzing student progress. Insights obtained from data provide educators with instant feedback on the unique capabilities and areas for improvement of each student. Armed with this knowledge, teachers can tailor their instructional approaches, offer timely support, and provide targeted assistance to ensure the success of every student. Overall, technology integration in personalized learning offers the potential to revolutionize education by providing individualized learning experiences, supporting diverse learning styles, promoting collaboration and communication, and facilitating ongoing assessment and feedback (Pillely, 2016; Scherer & Wiberg, 2018).

### **New Approaches to Integrating Technology in Science Education**

Recent progress in technology has created new opportunities to redefine the field of science education. Using technology in science education goes beyond just introducing digital tools; it includes transformative methods that utilize the potential of technology to improve the learning process. An important method is integrating virtual labs and simulations, creating digital settings where students can conduct experiments safely, providing a practical experience not always feasible in traditional labs (Hernández-de-Menéndez, Vallejo Guevara, & Morales-Menendez, 2019; Potkonjak et al., 2016). Furthermore, advanced technologies like augmented reality and virtual reality offer immersive experiences for students to explore intricate scientific concepts beyond conventional approaches (Papanastasiou, Drigas, Skianis, Lytras, & Papanastasiou, 2019). These technologies can enhance students'



understanding of complex scientific phenomena by providing interactive and visually engaging experiences.

Adaptive learning systems offer a new and creative method. These platforms utilize artificial intelligence and data analysis to customize content and speed according to each student's requirements. By identifying and adjusting to the students' unique learning styles and development, adaptive learning technologies provide an individualized and adaptable learning experience (Shemshack & Spector, 2020; Shute & Towle, 2018) . This strategy guarantees that every student can grasp fundamental concepts before moving on to more complex subjects, catering to the varied needs of learners in one classroom.

Moreover, the incorporation of multimedia tools is changing the delivery of scientific content. Interactive simulations, animations, and online multimedia resources offer dynamic and captivating options compared to traditional textbooks. These materials address different learning preferences and foster a more profound comprehension of complex scientific concepts. The use of technology extends beyond students' experiences to also include professional development for educators. Teachers can utilize online platforms, webinars, and collaborative resources to improve their expertise and instructional methodologies while staying updated on the latest developments in science education and technology. Incorporating technology into science education opens up new opportunities for exploration and learning.

### **Case Studies: Successful Integration of Technology in Science Classrooms**

The incorporation of technology into science classrooms is a developing area that has attracted considerable interest from educators and researchers. Encompassing diverse facets of this topic, the discussed studies investigate the implications, advantages, and obstacles associated with introducing technology-driven teaching tools—such as digital resources, computer simulations, and interactive whiteboards—into our educational settings. The study demonstrates how this integration can transform conventional teaching methods, encouraging student involvement, enhancing knowledge generation and evaluation processes, and fostering analytical thinking. It also underscores the important role of educators in skillfully coordinating these technologies and the necessity for ongoing professional training to ensure their effective utilization. However, despite the promising advantages, it is understood that the mere implementation of technology in classrooms does not ensure enhanced learning and highlights the need for systematic integration and careful planning. Implementing technology in classrooms hence remains a complex task that necessitates further research and innovation. Research on

the use of technology in education has been conducted as follows:

(1) “Effective Professional Development: Requirements for Technology Integration into Secondary Science Classrooms” by Maria Sophia Lobo emphasizes the importance of professional development in helping teachers integrate technology into their classrooms, specifically in secondary science education (Lobo, 2018). The paper highlights how technology enhances students’ learning experiences, fostering problem-solving skills and critical thinking. The integration of technology into classrooms can be hindered by factors such as lack of professional development, teacher apprehensions, and time constraints. The paper emphasizes the importance of personalized, relevant, and collaborative professional development supported by school leadership. Furthermore, it suggests that professional development should not only concentrate on learning specific technologies but also encourage teachers to embrace new technologies independently. Successful technology integration requires teachers to adjust their teaching methods to create more student-centered environments. In science classrooms, technology integration is not just beneficial but essential due to the interconnectedness of science and technology. However, this necessitates substantial changes in pedagogical methods — a shift from traditional teacher-led instruction to a more student-centered, constructivist environment. In conclusion, successful technology integration in secondary science classrooms requires comprehensive professional development programs concentrating on technology, shifts in pedagogical approaches, collaboration, and sustained support from school leadership.

(2) The study examined 20 STEM curriculum units from a teacher professional development program, covering life science, earth science, and physical science (Guzey, Moore, & Harwell, 2016). These units involve real-world situations and require students to apply scientific and mathematical concepts, collaborate, and engage in design processes iteratively. The extent of integration in the curriculum units varies, as revealed through assessment with STEM-ICA. While this approach was effective, the study emphasized the necessity for more research into organizing curriculum and instruction to facilitate a smoother learning process across different STEM disciplines. Additionally, it underscored the significance of collaborative curriculum development, professional development programs, and improved design of STEM education material for teachers to enhance quality.

(3) The paper by Susanne Walan aims to understand “the practical implications and perceptions of science teachers who have transitioned their instruction to largely digital technology” (Walan, 2020). Two secondary school educators and their 7th-grade classes were observed and interviewed. The study found that teachers were confident in using digital technology and utilized predetermined digital study materials. They also noted increased

student motivation and improved assessment processes with the use of digital technology. Recent studies have shown that teachers need ongoing support and professional development to effectively integrate technology into their classrooms. Many institutions have implemented various programs, workshops, conferences, webinars, communities, and mentoring programs for this purpose. Moreover, the study reveals that the use of digital tools had reshaped their teaching, making it more varied and individualized. Due to the range of digital tools available, students could work at their own pace which was seen as an advantage.

(4) Based on the reviewed paper, computer simulations can be effective in science education across K-12 to college levels when used alongside traditional instructional approaches (Smetana & Bell, 2012). Implementing simulations can improve students' content knowledge, promote scientific process skills, and facilitate conceptual change. The efficacy of computer simulations depends on the quality of their design, embedded support systems, and the guidance provided by teachers. Simulations also prove beneficial when they challenge students' existing conceptions and promote cognitive dissonance, reinforcing the relevance of constructivist learning approaches. However, while effective in many cases, computer simulations should not replace other forms of instruction or hands-on learning experiences but supplement them. It is also suggested that simulations are most effective when they cater to individual learners' differences and pre-existing knowledge, allowing for an individualized learning experience. Complementary materials that support learning and allow students to become familiar with the technology are also essential for maximizing the benefits of using computer simulations. Finally, the order of using computer simulations, either before or after traditional instruction, could impact their effectiveness, but more research is needed to confirm the optimal sequencing.

(5) The paper focuses on pedagogical approaches for technology-integrated science teaching, especially through the use of simulations and interactive whiteboards (Hennessy et al., 2007). It suggests that these digital technologies can serve as effective tools for teaching science in ways that could foster student engagement, critical thinking, and conceptual understanding. Teachers need to ensure that students understand the limitations of virtual experiments. Therefore, teachers' role in orchestrating these technologies is crucial in enabling effective learning. The paper implies the potential of such tools in shaping innovative pedagogical strategies, yet it also highlights the complexities and potential challenges involved in effectively integrating these forms of technology into science classrooms.

(6) The paper examines how learning community frameworks can help preservice elementary teachers design digital technology-integrated science

experiments (Nipyrakis, Stavrou, & Avraamidou, 2023). The study found that participatory discussions and peer interactions were critical for the success of the learning community. Furthermore, understanding the interaction and collaboration among teachers during the design process can be essential for fostering effective learning environments. The paper emphasizes the importance of collaborative environments in designing technology-enhanced science teaching material and their potential to transform teacher preparation and enhance digitized education.

(7) The study “Examining technology integration in middle school STEAM units” examines the use of technology in STEAM education for middle school (Herro, Quigley, & Jacques, 2018). The authors found that technologies were frequently used for knowledge production, problem-solving, and collaboration to address real-world challenges, improving the overall learning experience. However, not all educators extensively utilized innovative technology. Technology was noted to contribute positively to STEAM education, requiring careful planning, practice, refinement, and support to fully encourage student-centered learning. The study acknowledges that while incorporating technology can drive educational progress in a STEAM curriculum, it does not guarantee an automatic shift from consuming to producing knowledge. This highlights the necessity for further research into the most effective methods of utilizing technology in STEAM education.

(8) This study focuses on the use of technology by Secondary Science Preservice Teachers during their methods courses and student teaching residency (Kilty & Burrows, 2021). Their utilization of technology varied based on personal experiences, teaching content areas, and available resources within their placements. However, this implementation did not always result in high scores on the Technology Use in Science Instruction instrument, indicating the use of technology did not consistently align with effective pedagogical strategies. These underlines possible gaps in the understanding among SSPSTs about how to meaningfully integrate technology into their teaching and suggests a need for further guidance and support in harnessing technology as a useful tool for scientific instruction. The study indicates the importance of further training and preparation for prospective teachers to effectively integrate technology into their teaching. This highlights the need for teacher educators to prioritize this area when preparing future teachers.

The studies reviewed demonstrate the transformative impact of digital technology in education across various disciplines, reshaping teaching methods and enhancing student learning experiences. The findings highlight that effective integration of technology in teaching, from STEM to science instruction, relies not only on adoption but also on a deep understanding of digital tools, extensive research, comprehensive training, meticulous

planning, and continuous support. Despite teachers' overall confidence in using digital technology, discrepancies exist in its application, emphasizing the need for more targeted professional development and guidelines. It is crucial to recognize that digital technology should complement traditional teaching methods rather than replace them. This emphasizes the requirement for a balanced and comprehensive approach to education. There is an urgent need for further exploration into the most successful approaches to implementing this shift towards digitization which necessitates educators continually adapting to technological advancements and emerging pedagogical strategies with thorough understanding.

In summary, the sources highlight the importance of integrating technology into education, particularly in STEAM classrooms and science instruction. The sources suggest that technology integration can positively impact student learning, but there is a need for effective professional development and support for teachers in order to meaningfully integrate technology into their teaching.

### **Challenges in Implementing Technology in Science Education**

Implementing technology in science education can bring numerous benefits, but it also poses several challenges. Common challenges associated with integrating technology into science education include limitations on teacher knowledge and expertise related to curriculum design, the struggle of preservice teachers to use technology effectively due to lack of experience and resources, and resistance from some secondary science teachers who believe in teacher-led content delivery as the most efficient method for student learning. There is a need for effective professional development programs that address these barriers, build confidence among educators, encourage collaboration among peers, and promote student-centered inquiry-based lessons that successfully integrate technology. Implementing technology in science education requires overcoming challenges related to limitations in teacher knowledge and expertise, preservice teachers' lack of experience and resources, and resistance from some teachers who prefer traditional methods. Additionally, there are challenges related to the availability and adequacy of technology resources, time constraints for teachers to learn and implement new technologies, lack of support from school administration, and the need for ongoing professional development to stay abreast of new technologies and pedagogical strategies.

Implementing technology in science education can bring numerous benefits, but it also poses several challenges. Here are some common challenges associated with integrating technology into science education: "Inequality". The digital gap can lead to unequal educational opportunities as

not all students have the same access to technology, with some having limited or no access to essential devices and internet connectivity. This imbalance raises challenges for educators in delivering comprehensive teaching that effectively integrates technology into student-centered learning environments. Furthermore, it highlights the need for professional development aimed at addressing barriers and enabling equitable technology integration in education. “Teacher Training”. Many educators face challenges in integrating technology into their teaching due to a lack of essential expertise and preparation. Ongoing professional development is crucial for ensuring that teachers not only have the necessary skills, but also feel confident in using educational technology effectively. “Inadequate Infrastructure”. Some schools may face challenges with essential infrastructure, including bandwidth limitations and outdated hardware and software. These obstacles can hinder the seamless integration of technology in the classroom. “Financial Constraints”. Acquiring and sustaining technological tools can be a costly endeavor for educational institutions, particularly those with limited funding. As a result, many schools may encounter difficulties in obtaining the latest educational technologies. “Integration with Curriculum”. Ensuring that technology is aligned with the current curriculum and learning goals can present challenges, as teachers must have in-depth knowledge of the concepts and identify the unique affordances that technology provides for the subject matter. It is important to strike a balance between using technology for the sake of it and integrating it effectively into the educational process while also considering limitations “Resistance to Change”. Teachers and school leaders might oppose the transition to a more technology-focused approach due to uncertainty, lack of self-assurance, or a preference for conventional teaching methods. This resistance can be attributed to their deep-seated beliefs about traditional modes of instruction and the challenges associated with integrating new educational technologies effectively. “Student Skills”. While it is commonly stated that students are “digital natives,” the reality is that they may not possess the necessary digital literacy skills required for academic and scientific purposes. Hence, educators need to ensure that these skills are taught alongside content knowledge. “Security Concerns”. The incorporation of technology in education sparks worries regarding data security and student privacy. Educational institutions need to enforce strong measures to safeguard sensitive information, ensure adherence to privacy regulations, and address the ongoing concerns related to technology integration among teachers. “Rapid Changes”. Educational technology is constantly evolving, presenting schools with the challenge of keeping up with the latest tools and trends. This can result in outdated technology and teaching methods in the classroom. To address these potential challenges and ensure successful technology integration, it is crucial for educational institutions to provide effective professional development for teachers. “Diversity and Inclusion”.

Ensuring accessibility of technology for students with varying needs and learning styles is essential. It's crucial to take into account the requirements of students with disabilities and offer necessary accommodations, including assistive technologies and adaptable teaching methods. By doing so, educators can create an inclusive learning environment that promotes equal access to educational resources for all students.

### **Future of Science Education: The Potential of Personalized Learning**

The potential of personalized learning in shaping the future of science education holds great promise. Tailoring educational experiences to individual students can revolutionize how science is taught and learned. Personalized learning allows for the creation of individualized learning paths based on students' interests, abilities, and learning styles (Grant & Basye, 2014). This means adapting content and activities to match each student's pace and preferences (Walkington & Bernacki, 2020).

The integration of adaptive technologies can provide real-time feedback and assessments, enabling educators to identify areas where students may need additional support. These technologies can adjust the difficulty of tasks to challenge students appropriately. Technology integration is essential to improve student learning and ready them for their future after formal education (West, 2012). The literature emphasizes the need for a fluency-friendly student-centered learning environment as ideal for technology integration (Chen & Tsai, 2021; Keengwe, Onchwari, & Onchwari, 2009).

Personalized learning can significantly boost student engagement by making science education more relevant and interesting, tailoring content to students' interests and incorporating real-world applications to enhance motivation and curiosity (Grant & Basye, 2014; Kallick & Zmuda, 2017). Personalized learning shifts the focus from a teacher-centered approach to a student-centered one, allowing students to become active participants in their learning journey and fostering a sense of ownership and autonomy. This has been argued as offering a more coherent and meaningful approach to teaching and learning science.

Educators can leverage data analytics to make informed decisions about teaching strategies, content delivery, and intervention plans. This data-driven approach helps optimize the learning experience for each student. Personalized learning, facilitated by technology, opens up opportunities for global collaboration (Beldarrain, 2006). Students can connect with peers worldwide, fostering a collaborative and culturally diverse approach to scientific inquiry. When communication technologies are integrated effectively in the learning process, they create engaging learning environments as learners progressively embrace technology for educational purposes (Groff, 2013).

Personalized learning is not bound by traditional classrooms. It allows for flexible environments, including online platforms, virtual labs, and interactive simulations, offering diverse and dynamic ways for students to explore scientific concepts.

### **Conclusion**

In conclusion, the integration of technology in education, specifically personalized learning approaches, is crucial for enhancing student engagement and preparing them for the 21st century. By shifting to a student-centered learning environment, incorporating real-world applications, and leveraging technology tools, educators can create a more engaging and meaningful science education experience for students.

The integration of technology into science education supports the shift towards personalized learning, offering great potential to revolutionize teaching methods and enhance student learning outcomes. However, various challenges such as teacher training, inadequate infrastructure, resistance to change, and cybersecurity hinder seamless technology integration. Overcoming these barriers requires continuous professional development for teachers, financial resources, and a holistic understanding of the curriculum objectives. Also, a mindful approach in integrating technology effectively, rather than merely using it for the sake of it, is essential.

Personalized learning can tremendously increase student engagement by making science more relevant, adjusting content to students' interests, and incorporating real-world examples. Technology enables a shift from teacher-centered to student-centered learning, augmenting student autonomy and ownership over their learning journey. Integrated technology empowers educators with data analytics to make informed decisions about teaching strategies and intervention plans. The advent of digital learning platforms, virtual labs, and interactive simulations paves the way for students to explore scientific concepts more dynamically and engage in global collaboration.

In conclusion, while significant challenges remain, technology integration in science education, coupled with personalized learning, holds immense potential to redefine traditional teaching methodologies. By tailoring education to each learner and leveraging advanced technologies, we can enhance scientific literacy, foster a deeper understanding of concepts, and prepare students for an increasingly digital world. Overall, the integration of technology into science education has the potential to revolutionize teaching methods and enhance student engagement and learning outcomes.



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# Chapter 11

## **THE IMPORTANCE OF OPEN SPACE DESIGNS IN RECREATION EDUCATION**

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## Introduction

In the modern world, individuals' lifestyles, technological advances and increased work pace have an increasingly complex impact on their lives. In this fast pace of life, it is of great importance for people to maintain and improve their physical, mental and emotional health. At this point, the concept of recreation refers to the whole of the activities that individuals carry out in order to effectively utilize their free time, rest, have fun and contribute to their personal development. Humans are not only individual but also social beings. After meeting their physiological and security needs, social needs emerge because individuals tend to satisfy their need for social connections such as being loved and being included in a group (Karaküçük, 2008). Leisure time refers to the period of time outside the working hours of the modern individual, outside of compulsory work duties such as weekends, annual leaves and retirement periods. The mental and physical fatigue, exhaustion and exhaustion that occur in individuals who are studying or working are explained as the recreation of the individual's energy through recreational activities. According to the general meaning of this recreation phenomenon; recreation is defined as activities that refresh, rest and voluntarily do after the compulsory work and activities of the person (Mirzeoğlu, 2003). Recreation can also be seen as a means for individuals to evaluate their free time and express themselves. Ven der Smissen (1990) defines recreation not as an activity, but as a result of the individual feeling better. Gray (1990) defines recreation as the creative use of free time. Fromm (1987) states that the aim of society is to ensure the full development of the individual's potential.

Today, developments in the understanding of leisure time are perceived as a process that should be evaluated in the most effective way in industrialized countries and partly in developing countries such as Turkey, by associating it with development and civilization. In this context, factors such as the reduction in daily and weekly working hours, the increase in vacation days and the evolution of social norms have increased the importance of leisure time in the social and social context more significantly and rapidly. Regaining the mental and physical fatigue and exhaustion that occur in individuals in the field of education or business life through recreational activities refers to the process of revitalizing the energy of the individual. This phenomenon of regaining energy is generally defined as recreational activities that the individual voluntarily performs after his/her compulsory work and activities (Mirzeoğlu, 2003). Researchers emphasize that participation in leisure activities is closely related to the level of social welfare and that leisure education can make significant contributions to individual and social development (Türkmen et al., 2013). Recreation is an important concept that enables individuals to engage in activities that they prefer to spend their free time in a pleasant way and that are suitable for their

interests and abilities. In this context, recreation activities allow individuals to realize their personal goals, achieve satisfaction and engage in voluntary activities (Güngörmüş & Yenel, 2020; Nkwanyana, 2020). At the same time, recreation contributes to individuals' search for satisfaction and happiness, allowing the individual to express his/her own naturalness and originality through the feeling of satisfaction it directly creates (Beard & Ragheb, 1980; Benatuil, 2018). As stated by Haworth and Lewis (2005), recreation activities also provide many benefits for physical and mental health. In this context, it is of great importance to encourage individuals to voluntarily participate in recreation activities that suit their interests and abilities. Adventure recreation activities, especially in open spaces, encourage individuals to participate in activities that are interesting and involve risk. However, examining the factors affecting participation in such activities and discussing the outcomes of participation are important for a deeper understanding of the concept of adventure recreation (Próchniak, 2017). Participation in adventure activities brings about various positive outcomes for individuals. Among the reasons for participating in these activities, important parameters such as subjective well-being and psychological resilience come to the fore. Adventure activities help individuals to experience self-transcendence by allowing them to push their personal limits and cope with the challenges they face. These experiences allow individuals to experience subjective well-being parameters such as emotional empowerment, increased self-confidence and improved stress coping skills. At the same time, adventure activities can trigger spiritual serenity and positive emotional states by giving participants the chance to interact with the beauty of nature. For these reasons, participating in adventure activities stands out as an effective strategy to increase individuals' psychological resilience and subjective well-being. Literature studies on this topic point to a significant potential for a deeper understanding of the positive effects of adventure activities on individuals. Understanding the factors that influence participation in recreation activities is important for recreation specialists and leisure practitioners. These factors include individual, social and structural factors (Torkildsen, 2012). In this context, Jenkins and Pigram (2004) emphasize that participation in recreation activities affects coping with difficulties and plays an important role in maintaining physical and mental health. When the benefits of recreation activities are analyzed, Iso-Ahola (2006) states that individuals should explore their free time to benefit from these activities. At this point, it is important for recreation leaders and individuals to understand and work to increase these benefits. The categorization of recreation education is an important tool for recreation leaders to plan and manage activities. Various classifications such as community recreation, commercial recreation, workplace recreation and therapeutic recreation involve different purposes and target audiences. In this context, it can be concluded that recreation plays a critical role in improving individuals' quality of life and supporting

their overall well-being, and it is important to develop effective strategies to encourage participation in recreational activities. By emphasizing the importance of recreation, this study aims to encourage individuals to make effective use of their free time.

### **Characteristics and Classification of Recreation**

Recreation is a phenomenon that offers significant advantages in terms of rest and re-energizing at a certain stage of life (Ramsay, 2005). This concept basically aims to provide fun, rest, refreshment and recovery, while at the same time giving individuals hope for the future. The prominent features of recreation allow individuals to develop personally, gain intrinsic rewards, display their creativity and integrate with long-term activities (Allen, 2011).

#### **Characteristics of Recreation**

1. **Positive Contributions to Individual's Personal Development:** Recreation activities have a positive impact on the personal development of individuals. This allows individuals to discover their potential, push their limits and acquire new skills.

2. **Adds Adventure, Creativity and Richness to Life:** Recreation adds adventure, creativity and enrichment to individuals' lives. This allows for a variety of experiences that break out of the monotonous routine of life.

3. **Necessary for Cultural, Moral and Spiritual Wellbeing:** Recreation activities are essential for the cultural, moral and spiritual well-being of individuals. This strengthens individuals' social bonds and provides inner balance.

4. **Contributes to Identity Formation and Competence Development:** Recreation activities make significant contributions to the individual's identity formation and competence development. This enables the individual to recognize themselves, discover their strengths and increase their self-confidence.

5. **Improves Physical and Emotional Health:** Recreation activities help individuals improve their physical and emotional health. This includes the positive health effects of regular physical activity.

6. **Creates a Sense of Belonging:** Recreation activities give individuals a sense of belonging. Group activities and shared experiences contribute to connecting people and creating a sense of community.

#### **Classification of Recreation**

Recreation can be classified in different ways using various criteria (Jensen and Naylor, 2000). These classifications are important for understanding the wide range of recreation and emphasizing the diversity of different activities.



1. According to the Forms of Participation in Activities: Active, passive or causal recreation.
2. By Place: Outdoor, indoor, rural or urban recreation.
3. By Number of Participants: Individual or group recreation.
4. According to Cultural Values: National culture or international culture recreation.
5. According to Time Choices: Day, weekend or long-term recreation.
6. According to Functions: Intellectual, artistic, cultural, tourism, social, sporting, health and therapy, commercial and voluntary recreation. These classifications show the multifaceted nature of recreation and the wide range of options it offers to meet the various needs of individuals (Broadhurst, 2001).

Recreation activities can also be done as a group as well as individually, so recreation activities bring individuals together and allow them to make new friendships. Collective activities strengthen social bonds and increase social relations. In today's modern world, people's lifestyles have become increasingly complex due to technological developments and the increase in work pace. In this fast pace of life, it is of great importance for individuals to maintain and improve their physical, mental and emotional health. At this point, the concept of recreation plays an important role. Recreation can be defined as the whole of the activities carried out by individuals for the purpose of evaluating their free time, resting, having fun and personal development. Humans are social beings as well as individual beings. After individuals meet their physiological and security needs, their social needs arise because they are social. Needs such as loving and being loved, being included in a group can be given as examples of social needs (Karaküçük, 2008).

Leisure time refers to the period of time that the modern individual spends after working hours, on weekends, during annual leaves and retirement periods, outside of compulsory work and duties. Today, as a result of the evolution in the understanding of leisure time, especially in industrialized countries and partly in developing countries such as Turkey, it has been tried to be evaluated in the most effective way in line with development and civilization. In this context, researchers emphasize that participation in leisure activities is related to the level of social welfare and that leisure activities can contribute to personal and social development (Türkmen, 2013). The importance of recreation stems from the fact that it provides the elements necessary for individuals to maintain a healthy and balanced lifestyle. In environments dominated by intense work routines, stress, pressure and competition, the time allocated to recreation provides both physical and mental relaxation. Physical activities support muscle strengthening, protect cardiovascular health and contribute to the prevention of problems such as

obesity, positively affecting overall health. Artistic activities increase mental flexibility, while social activities increase the quality of life by strengthening individuals' social ties (Güneş, 2021).

Recreation is a broad concept that includes various activities that individuals participate in to increase their physical, mental and social well-being. These activities include sports, art, nature trips, hobbies, travel, cultural activities. The social dimension of recreation can also contribute positively to the general well-being of society. Recreation activities that encourage people to come together, interact and share a common purpose can strengthen the sense of solidarity and unity in society. Social bonds enable people to support each other and help each other through difficult times. Recreation can increase cultural awareness through a variety of activities. Participation in cultural activities such as artistic events, music, dance, theater can help people understand and appreciate different cultures. This can increase inter-communal tolerance and enrich cultural diversity. Moreover, the social dimension of recreation can contribute to the development of social skills and healthy social habits of younger generations. Sports teams, art courses or other group activities in which children and young people participate allow them to develop leadership, teamwork and communication skills. The social benefits of recreation also include strengthening the sense of unity and solidarity in society, encouraging people to share common values and enabling society to live together in a healthier way.

In conclusion, recreation plays an important role not only for the personal development of individuals, but also for the general well-being of society. It promotes social interaction, increases cultural understanding and strengthens social bonds. Therefore, investing in spaces and activities suitable for recreation can contribute to a society living in a healthy, happy and interconnected way.

### **Recreation Education**

The historical development of recreation undergraduate programs started four-year education in our country, first in Physical Education and Sports Schools and then in Faculties of Sports Sciences. In later periods, with the transformation of Tourism Management and Hotel Management Schools into Tourism Faculties, recreation management programs started to be opened rapidly in these schools. This evolution has provided a wide range of options for students who wish to pursue an undergraduate degree in recreation. However, these dynamic developments have also increased the importance of new evaluations and research on recreation undergraduate programs. At this point, more in-depth studies on recreation education are of great importance for the effective management and development of programs (Tütüncü, 2021). Studies on recreation education have been addressed in a wide range in the

literature. In the study conducted by Kozak, Tütüncü, and Kozak (2014), the objectives of recreation and recreation management programs were examined in detail. Curriculum development suggestions at the university level presented by Tütüncü (2008) aimed to strengthen the programs of institutions providing education in the field of recreation management. In the study conducted by Tütüncü (2012), the importance of interdisciplinary doctoral programs for recreation was emphasized. In Tütüncü's (2018) study, the development of faculties and recreation departments was discussed, and in this context, the focus was on expanding the academic framework of recreation. Tütüncü, Akgündüz, and Yeşilyurt's (2019) study focuses on the comparison of the curricula of recreation management and tourism management departments and reveals the similarities and differences between these two fields. It is observed that these evaluations and studies generally focus on curricula. The fact that studies on curricula are on the agenda can be considered as an important necessity in order to update the education system and adapt to changing conditions. According to the data of the Higher Education Information Management System in our country, there are 72 active Recreation Departments in state and foundation universities (URL-1, 2023). These departments generally operate within the scope of Faculties of Sports Sciences and Schools of Physical Education and Sports. This data shows that recreation education has an increasing importance in our country. Socially, recreation education aims to contribute positively to the quality of social life by improving individuals' leisure time skills. Economically, the need for trained specialists in the sector increases the importance of recreation education in terms of job opportunities. At the institutional level, recreation departments have the potential to provide qualified personnel in various fields in the tourism sector, sports organizations, municipalities and private sector. At the academic level, these departments aim to train specialized professionals for the sector by providing students with knowledge and skills in subjects such as recreation management, event planning and sustainable tourism. This wide network of recreation education in Turkey offers a multifaceted contribution from social, economic, institutional and academic perspectives. Experts trained through these departments play important roles in areas such as the development of social life, sustainability of tourism, welfare of society and economic development, and have a positive impact on the overall development process of our country.

### **Relationship between Formal Education and Recreation Education**

Formal education and recreation education are fields of education with similar characteristics that aim to contribute to the personal development of individuals. Both types of education aim to develop universal skills such as leadership, communication, problem solving and teamwork by providing students with a wide range of knowledge from an interdisciplinary

perspective. They also encourage social and cultural interactions, aiming to provide students with event planning, organization and management skills. Both types of education aim to guide individuals towards healthy lifestyles, improve quality of life and support social participation. In this context, formal education and recreation education aim to develop individuals in a multifaceted way and add meaning to their lives. The main differences between formal education and recreation education are based on the focal points and goals of the student training processes. Formal education provides students with a formal education, usually focusing on the transfer of academic knowledge and skills. This process is usually carried out through a standardized curriculum in schools and universities. Recreation education, on the other hand, aims to contribute to the personal development of individuals in areas such as leisure activities, sports and entertainment. Recreation education usually emphasizes practical skills and aims to give students experience in activity planning, organization and management. The distinction between these two types of education has clear differences in terms of the content offered to the student, learning methods and targeted outcomes. Considering the standard structures of educational environments; recreation education environments, are specialized spaces that offer students the opportunity to experience a variety of leisure, sports and recreational activities. These environments usually range from large, open spaces to indoor sports facilities. Outdoor recreation areas may have large green areas to support nature activities, hiking trails, campsites and infrastructure suitable for adventure sports. Indoor spaces can include facilities such as gyms, swimming pools, fitness centers. These environments should have appropriate infrastructure that allows students to develop their event planning, organization and management skills. At the same time, it is important that they are designed in accordance with safety standards to enhance the comfort and experience of the participants. These environments used for recreation education provide students with practice-based experiences, allowing them to transform theoretical knowledge into practice and contribute to strengthening students' skills in the field of recreation management.

While recreation education in universities around the world is based on similar basic principles, there are some differences. In Turkey, recreation education is usually offered in faculties of sport sciences, schools of physical education and sports or related departments such as tourism. Programs usually include courses on sports management, outdoor sports, event planning and tourism. In addition, internships and field studies provide students with practical experience. Around the world, recreation education can often fall under disciplines such as sport management, tourism and event management. Many universities offer a broad curriculum that gives students the opportunity to specialize in a variety of recreation fields. While the emphasis in recreation

education worldwide is on universal skills such as intercultural understanding, sustainability and leadership, in Turkey it tends to focus more on local needs. Both in Turkey and around the world, recreation education aims to provide students with knowledge and skills in healthy lifestyles, recreation and leisure activities.

The International Society for Physical Activity and Health (ISPAH) is a leading organization dedicated to promoting physical activity globally. ISPAH is known for its efforts in research, policy-making and advancing practice. One of its goals is to lead advocacy activities to increase knowledge transfer and improve policy and practice. Effective advocacy to change physical activity behaviour involves building consensus using resources appropriate to the various stakeholders. A key element for successful advocacy is to effectively communicate key messages by reaching agreement on 'what works' (Shilton, 2008). There are 8 recommendations for what works for physical activity: whole-school programs, active transport, active urban design, health services, public education including mass media, sports and recreation for all, workplaces, community-wide programs (Milton et al. 2021).

### **Nature Based Recreation Training**

Learning approaches that are directly linked to environmental interaction are based on the philosophy of experiential learning. In this process, all activities performed are seen as a means, that is, they represent a means, not an end (Priest & Gass, 2018; Dinç, 2018). Interaction with nature is critical for the development of cognitive processes. Contact with nature, including observation, education and recreational activities, leads to a better understanding and appreciation of nature (Necka & Żbikowski, 2005). Being in nature or depicting nature can take place for many different reasons (Gass, 1993), including self-expression for sporting, recreational or educational purposes (Figure 1). Beyond the positive effects of physical activity and nature on health, outdoor sports promote the intrapersonal and interpersonal development of young people. They also offer unique opportunities in natural and social settings to provide social benefits such as crime reduction and active citizenship (Dickson et al., 2008). These activities lead individuals to connect with nature, other people, and their own selves, thus realizing several positive effects simultaneously (Eigenschenk et al., 2019).



*Picture-1. Nature-based education (URL-2, 2023).*

In a broad perspective, nature-based education aims to increase spatial orientation, overcome terrain obstacles, develop body strength, apply safety rules, learn by processing natural products, and integrate outdoor experience with prior knowledge (Gilberstson et al., 2005). Nature-based outdoor recreation activities are generally accepted as an important component of recreational activities based on physical exercise or sports activities in the literature (Amman et al., 2010; Kılıç & Şener, 2013). Outdoor sports offer an environment where the individual interacts intensively with his/her own personality, others and nature. Therefore, in addition to the effects of such activities on interpersonal and intrapersonal development, they also affect people's relationship with nature (Eigenschenk et al., 2019). Physical activity, referring to outdoor education, is a difficult term to define, but according to the research literature, it can often be associated with concepts such as physical or active recreation (Pasek & Olszewski, 2017).

### **Design Process of Recreational Open Spaces**

Green open space is the only public service that affects quality of life, physical and psychological well-being and is free and accessible to all, regardless of demographic characteristics and socio-economic status (Abbasi et al., 2016). In urban design research, public open space is often defined as a space that is 'managed, typically green, usable and open to all, even if temporarily controlled' (Carmona, 2010). Project For Public Space proposes four main components for open space design that encourage people to visit: accessibility, variety of activities, comfort and sociability (Project For Public Spaces, 2000). The three main factors affecting the use of green open spaces are user needs, open space quality and the spatial structure of the open space. Although these spaces are designed for people, the activities performed vary in terms of type, quantity and duration (Abbasi et al., 2016). Carr et al. (1992) defined public open spaces as a common ground where people perform functional and leisure activities that connect a community. Access to quality open spaces is associated with improved well-being, user satisfaction and quality of life, and contributes to social inclusion. The quality of physical features, together with the spatial structure of the layout, has a direct impact

on how open spaces are used in terms of type of activity, duration of activity and number of people visiting open spaces (Abbasi et al., 2016). Gehl (2007) argues that high quality, functionality and safety are the basic needs for a well-designed open space. The important thing is to provide the opportunity to meet the needs of users equally for all members of society (Figure 2).



Figure 2. Different open space recreation areas according to their users (URL-3, 2023).

The long-term sustainability of a public space requires an awareness of environmental factors and future changes. Public spaces are like living beings in need of constant maintenance and repair. They need a design guide to interact with environmental variables and management dynamics. It should not be forgotten that public space is a dynamic asset that requires constant attention and care not only in terms of its physical structures but also in terms of management strategies and design principles (Irani et al., 2017). According to Gehl (1987), outdoor activities are classified into three categories for all types of public spaces. These are “necessary, optional and social” activities. Necessary activities are essential; people will perform them regardless of the environmental conditions of the outdoor space. Optional activities are voluntary and often linked to enjoyment and self-actualization; they are significantly influenced by the physical condition of the open space. Social activities are those that require the presence of other people. Gehl argued that when public spaces are of poor quality, only necessary activities take place. But when they are of good quality, a wide range of human activities can take place, including creative activities such as painting and playing music. When planning spaces, designers focus on understanding potential user needs. Understanding user needs is the foundation of a well-designed open space, a design that attracts people, facilitates their activities and encourages them to spend more time doing these activities (Francis, 2003). In order to create successful designs and livable spaces, it is important for designers to know

user needs. People expect that spaces should be carefully designed to meet their needs and satisfy their purposes (Günel & Esin, 2007).

The understanding of environmental education based on nature experience is harmoniously similar to the experiencing and place-oriented dimensions of environmental education (Klautke & Kohler, 1991; Özdemir, 2010). The definition of space as open space, from Lynch's perspective, refers to a space that can be easily entered. However, Francis, while agreeing with Lynch's definition, argues that it is a more accurate approach to classify urban spaces not only as closed or open, but also as accessible or inaccessible (Francis, 1987). This classification emphasizes factors such as accessibility and usability in addition to the physical characteristics of the space.

### **The Contribution of Recreational Open Spaces to Nature-Based Education**

Nature-based education is an educational approach that emphasizes students' direct interaction with nature and their learning experiences in the natural environment. Nature-based environmental education is based on the finding that it positively affects students' sensory closeness to nature, interest and behavior (Kals et al., 1999). Recreation areas provide a suitable environment to implement this educational model and provide students with unforgettable nature experiences. The quality of the physical features of open space increases people's satisfaction and quality of life (Beck, 2009). This education model can have positive effects on children's general development as well as raising environmental awareness (Table 1).

Önder (2015) emphasized the importance of personalization and addressing individual differences when planning education. He stated that in the process of nature and environmental education planning, the educational and cultural levels of individuals, their families and the environmental factors they are in should be carefully considered. Health and physical education and environmental knowledge should be integrated with holistic and participatory approaches that recognize changing social and cultural practices in built and natural environments (Atkinson, 2002; Welch et al., 2012).

*Table 1. Diversity of Application of Nature-Based Education in Recreation Areas*

|                               |  |
|-------------------------------|--|
| Outdoor Classrooms            | Recreation areas can be used as outdoor classrooms and learning spaces. A natural environment provides a suitable backdrop for students to transfer knowledge, interact and gain experience. |
| Nature Walks and Explorations | Recreation areas are an ideal setting for students to explore nature. Activities such as nature walks, observations, and learning about flora and fauna can be organized.                    |
| Outdoor Games and Activities  | Recreation areas give students the chance to engage in outdoor games and activities. This allows students to learn while having fun.   |



|                                      |   |
|--------------------------------------|---|
| Agriculture and Gardening Activities | Recreation areas can be used for small gardens or agricultural areas. Agriculture and gardening activities can be organized for students, such as working with soil, growing plants and understanding the cycles of nature. |
| Environmental Education Programs     | Recreation areas can be used to organize educational programs for students on topics such as environmental issues, sustainability and conservation of natural resources.  |
| Camps and Nature Programs            | Recreation areas can provide a suitable backdrop for nature camps and student programs. Such programs offer students the opportunity to work in groups, develop leadership skills and a lifestyle in harmony with nature.   |
| Arts and Crafts Activities           | Recreation areas provide opportunities for students to engage in arts and crafts activities inspired by nature. Students can use a variety of materials to express their environment and interact with nature.              |

Nature-based education provides a rich platform for students to experience learning and develop environmental awareness. It encourages more effective use of public spaces (Gehl, 1987) and stands out as an important element that increases the social, environmental and economic values of cities (Beck, 2009).

As a result, recreation education stands out as a rapidly developing field in our country and around the world with the effective use of open space designs. Recreation undergraduate programs offered within the Schools of Physical Education and Sports, Faculties of Sports Sciences and Tourism Management and Hotel Management offer students a range of options enriched with outdoor designs. Evaluations and research have shown that updating recreation education curricula, especially in line with outdoor designs, plays an important role in effectively managing programs in outdoor environments and effectively training qualified professionals for the sector in outdoor areas. In addition, recreation education in open spaces provides multifaceted contributions from social, economic, institutional and academic perspectives. Recreation education supported by open space designs, together with formal education, contributes to individuals' personal development, healthy lifestyles and social participation. Nature-based recreation education, on the other hand, provides students with the opportunity to interact directly with nature in open spaces, raising environmental awareness, and this education model can be successfully implemented through various activities in open spaces. It is seen that recreation education and open space designs play an important role in improving the quality of life of individuals and society and that developments in this field should continue in the future.

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# Chapter 12

## **TEACHING FUTUR TENSE IN MULTIPLE INTELLIGENCE THEORY (MIT) IN FRENCH AS A FOREIGN LANGUAGE (FFL) CLASS**

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## Introduction

In the 21<sup>st</sup> century, with the impact of new technological tools, foreign language learning offers a universal and human process that spreads in a complex and often frustrating way. Since this period of technology, when the learner wants to learn and study a new language, he turns to new technologies, hoping to facilitate his learning and achieve his communication goals more quickly (Trujillo, Combe, Ferreira, Ollivier & Román-Mendoza, 2022). However, with the development of new information and communication technologies (ICT), not only the dimension of teaching and learning, but also the dimension of assessment have evolved. Thanks to digital technologies, all evaluation processes are carried out in interactive environments. Thus, as in all other areas of education, throughout our work, we will take advantage of technology and new learning methods in studying French grammar in French as a Foreign Language classes.

In addition, in the influence of the Common European Framework of Reference (CEFR), the teacher should always work on real and daily life tasks but not plausible ones (Mangenot & Louveau, 2007). In *Frames of Mind* (1983) and also *Unschooled Mind: How Children Think and How Schools Should Teach* (1991) and *Multiple Intelligences: The Theory in Practice* (1993), Howard Gardner redefines the concept intelligence and subdivides the 8 intelligences (explained in the scheme below).

In short, this study is based on these 8 types of intelligences of Howard Gardner including teaching future tense through the different styles of learning based on the different capacities of the learners.

## Teaching Grammar in Foreign Language (FL) Class

The table will be created with the researches on “the teaching of grammar in the classroom of Foreign Languages” as below. There are a lot of research this field. The table below illustrates this type of articles and dissertations for Masters and Doctoral theses.

**Table 1: Studies in teaching grammar in Foreign Language Classes**

| Studies in teaching grammar in Foreign Language Classes  |
|--|
| Gettliffe, 2022; Hinger & Tengler, 2022; Çalışır Gerem, 2019; Fougrouse, 2019; López & Fonseca, 2018; Günday, Aydın, 2017; Çakır & Atmaca, 2017; Yılmaz, 2017; Sahenk Erkan, 2016; Koçoğlu & Gaba, 2015; Gottloeber Raouafi, 2014; Özçelik, 2012; Chiss & David, 2011; Fougrouse, 2001; Celce-Murcia, 1991 |

The table above demonstrates the research in this area.



### Organisation in teaching French as a Foreign Language (FFL) Class

Learners discover through exercises and short stories the structural rule. The future is formed from the verb “to go” in the present indicative + of a verb in the infinitive. In this context, they are first given statements with verbs of the future. They are invited to work in sub-groups so that they can discover the rules of the near future themselves.

| Verb going to in present tense      | + | Verbe (Infinitif) |
|-------------------------------------|---|-------------------|
| Je vais (I'm going to)              | + | voir (see)        |
| Tu vas (You're going to)            |   | manger (eat)      |
| Il / Elle va (He's/She's going to)  |   | prendre (take)    |
| Nous allons (We are going to)       |   | visiter (visit)   |
| Vous allez (You are going to)       |   | rentrer (return)  |
| Ils /Elles vont (They are going to) |   | danser (dance)    |

### Multiple Intelligence Theory (MIT) in Foreign Language (FL) Class

This table will enumerate the studies in MIT in Foreign Language (FL) classes.

**Table 2: Researches on the Multiple Intelligence Theory (MIT) in Foreign Language (FL) classes**

| Researches on the Multiple Intelligence Theory (MIT) in Foreign Language (FL) classes  |
|--|
| Kıraç, 2020; Xu, 2020; Kartal, 2019; Akçin & Bektaş Çetinkaya, 2014; Čukić, 2013; Spirovska, 2013; Zülküf Altan, 2012; Yılmaz, 2010; Alpar, 2009; Arnold & Fonseca, 2009; Nadeau, 2006 |

In table 2, the researches in this field are demonstrated.

This visual diagram below illustrates Howard Gardner's 8 Eight Multiple Intelligences in detail.

Scheme 1: Multiple Intelligence Theory (MIT)



Psychology Today The illusory theory of Multiple Intelligences, <https://www.psychologytoday.com/us/blog/unique-everybody-else/201311/the-illusory-theory-multiple-intelligences>

The Multiple Intelligence Theory (MIT) was first proposed in 1986 by Howard Gardner. Howard Gardner is a researcher in cognition and education at the Harvard Graduate School of Education, professor of psychology at Harvard University. He has written about twenty books and several hundred scientific articles. According to him, there is not a single form of intelligence, but several independent forms with which we are all endowed in extremely variable proportions.

One of the new conceptions in the field of language teaching is the displacement of teaching centered on the teacher, the learner is thus the center of all educational activities. Thus, multiple intelligences have particularly interested specialists and didacticians in the field of teaching / learning. This article is based on this theory and its application in the teaching/learning of French as a foreign language at Marmara University in Istanbul in Turkey.

In this article, we will try to answer the following questions:






1. What factors influence multiple intelligences?
2. Among the multiple intelligences, which are the most frequent among Turkish learners of French as a foreign language at level A1?

The main objective of this article is to know the types of intelligences frequent among Turkish learners teaching French as a foreign language (FFL).

## Application

### Linguistic and Spatial Intelligence

The sentence and visual examples are demonstrated in table below:

|   | Exeamples   | Pictures  |
|---|---|---|
| 1 | Je vais prendre le bus dans 10 minutes.<br>(I'm going to take the bus in ten minutes)           |    |
| 2 | Tu vas visiter le musée cet après-midi.<br>(You're going to visit the museum in the afternoon.) |    |
| 3 | Il/ Elle va manger au restaurant ce soir.<br>(He's/She's going to eat in restaurant tonight.)   |   |
| 4 | Nous allons voir un film au cinéma.<br>(We are going to see a movie in cinema.)                 |  |
| 5 | Vous allez nager dans la piscine.<br>(You are going to swim in the pool.)                       |  |

|   |  |   |
|---|--|---|
| 6 | <p>Ils/Elles vont danser en boîte<br/>(They are going to dance in club.)</p> |  |
|---|--|---|

### **Bodily-Kinesthetic Intelligence and Musical Intelligence**

In this research, the teacher tells firstly to click on a website to listen, sing and dance together through youtube. The teacher clicked this website (<https://www.youtube.com/watch?v=zV0MXfbedVk>).

### **Interview Form**

The researcher applied an interview form to its learners as below:

| INTERVIEW FORM  |                                |
|---|--------------------------------|
| 1) Did you study the future tense while having fun thanks to this organization? |                                |
| a) <input type="checkbox"/> Yes   | b) <input type="checkbox"/> No |
| Explain your opinions   |                                |
| 2) Did you understand and memorize the near future well thanks to this work?    |                                |
| a) <input type="checkbox"/> Yes   | b) <input type="checkbox"/> No |
| Explain your opinions   |                                |
| 3) What are your positive opinions in this study? Explain all of them           |                                |
| 4) What are your negative thoughts in this research? Explain all of them        |                                |

### **Results, Discussions and Conclusion**

The results of this research are quoted below:

(i) These learners have well understood and memorized the future thanks to these applications planned by this work.

(ii) The quiz verifies that these learners studied the grammatical topic while having fun.

(iii) In addition, it justifies that they have understood and memorized the near future thanks to this organization.

(iv) As a result, it demonstrates that they appreciated this work. Moreover, they have no negative thoughts about this planning.

Nawafleh, Alrabadi & Al-Muhaissen (2021) carried out research between December 2018 and January 2019, at the European Languages Department of Mutah University in Jordan. A questionnaire of 28 questions was applied for the students (209 learners) of the 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> year. For the analysis of the data, the questions were separated into the following five categories: the motivation of the learners and the degree of mastery of French language, the teaching and learning strategies followed by the actors in the class, the methods adopted to the teaching of grammatical points, the use of French and Arab language in these classes and on error correction strategies. The results of this questionnaire show that 50% of learners are very motivated to study in their department, 63.7 % have a relatively good command of French, 24% of students are very satisfied with their level in writing, 54.9 % of students insist that they have good oral skills, 60.3 % of learners verify that they are generally weak on the different linguistic aspects of the French language, 17.2 of learners justify that they have shortcomings in phonetics, 15.1 of the learners express that they have weaknesses in French vocabulary and % 7.4 % of the students justify that they have major deficiencies in grammar. In addition, 82 % of learners are satisfied with the deductive and explanatory method while 18 % of students prefer the inductive approach. These results prove that the vast majority of learners prefer to see and understand the rules in order to be able to apply them while a small minority of students can manage to intuitively grasp the grammatical rules.

Şahenk (2016) conducted a questionnaire, a quiz and also an interview with the students of the department of English teaching (studying French as a foreign language of Marmara University). First by analyzing the results of the interview form, it was discovered that 72% of students prefer to study grammar with the inductive method. Moreover, the quizzes of the learners verified that 80% of the students have good results. In conclusion, by closely elaborating the interviews of the learners, it could be justified that 90 % of learners are satisfied and recently 85 % of students are learning French while having fun.

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# Chapter 13

## **THE IMPACT OF SOCIOECONOMIC STATUS AND SOCIAL CLASS ON SOCIALIZATION, EDUCATION AND COGNITIVE SKILLS IN EARLY CHILDHOOD**

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## Introduction

Lareau employed the concept of concerted cultivation to explain how parents in upper and middle socioeconomic status (SES) or social classes could more systematically develop and promote the cognitive skills of their children in a variety of ways, compared to parents in lower SES or social classes (Lareau, 2003). Differences in socialization, education, and child-rearing practices could affect the development of cognitive skills of children. Lareau devised the concept of concerted cultivation for families of primary school children, and a great deal of the literature concentrated on children in primary and secondary school ages regarding the concept of concerted cultivation. Theorists and researchers asserted that the idea and concept of concerted cultivation was already visible throughout early childhood. The ability of parents to promote, nurture and develop their children cognitively throughout early childhood and to engage them in organized leisure activities were regarded as two indicators of the concept of concerted cultivation. Researchers explored the two indicators of the concept of concerted cultivation to explicate subsequent differences in children's cognitive skills. They investigated whether concerted cultivation mediated the association between socioeconomic status and social class origin and cognitive skills of children. Drawing data from a longitudinal study on 1,632 children, researchers proved that higher socioeconomic status and social class parents read more to their 5-year-old children on a daily basis and engaged them more in organized leisure activities. The consequences evidenced that only participating of children in music activities mediated the relationship between parental socioeconomic status and the development of children's cognitive skills related to mathematics and reasoning. The extensiveness of concerted cultivation was underlined as a socialization and education style of parents in middle socioeconomic status and middle social class throughout early childhood. Nevertheless, it was asserted that concerted cultivation practiced by parents in middle socioeconomic status and middle social class as a style of socialization and education might only provide a modest contribution to children's cognitive development.

It was suggested that cognitive skills significantly predicted educational attainment of individuals, earnings and health. In their studies, Bernal and Keane (2011) and Bourne and colleagues (2018) indicated that cognitive skills predicted educational attainment of individuals while Murnane and colleagues (2000) reported that cognitive skills estimated earnings. In their studies, Bijwaard and colleagues (2015) pointed out that cognitive skills associated with longer-term consequences such as health, For this reason, individuals' cognitive skills were regarded and presented as a primary and fundamental resource that could promote educational and academic success in different domains of life. In their studies, Bradley and Corwyn (2002) and Duncan and Magnuson (2012) and Feinstein (2003) revealed that children from families

in higher socioeconomic status and social class had on average an advantage in cognitive skills over children from families in lower socioeconomic status and social class even before entering school. Also, it was discussed how such differences, inequalities and gaps in cognitive skills occurred and developed during early ages.

Previous studies denoted that parents' socialization, education, and child-rearing behaviors were key contributors to variations in cognitive skills of children (Anders et al., 2012; Niklas & Schneider, 2017; Sylva et al., 2013; Authors, 2020). The present study investigated and discussed the role of parents' socialization, education, and child-rearing behaviors in creating cognitive skill differences, inequalities, and gaps among children from different socioeconomic origins, socioeconomic strata, and social classes during preschool years. The study focused on the non-financial aspects of social backgrounds, socioeconomic strata and social classes. It was based on Lareau's (2003) theoretical ideas that parents in middle socioeconomic status and social class as well as parents in working-class differed in their socialization, education and child-rearing strategies. Middle socioeconomic strata and middle social class families actively endeavored to promote, nurture and develop children's cognitive competencies and skills during concerted cultivation processes in order to socialize and educate them. Meanwhile, working-class parents focused on meeting and satisfying the basic necessities of their children and allowed and enabled them to grow up and be raised more freely in a process dubbed "accomplishment of natural growth" (Lareau, 2003).

It was stated that some researchers tested Lareau's theoretical ideas and argument in a number of studies; however, Cheadle and Amato (2011) and Covay and Carbonaro (2010) asserted that some questions were left unanswered. Lareau described the primary and fundamental dimensions of socialization, education, and child-rearing strategies and argued that the dimensions of such strategies differed most remarkably across socioeconomic strata and social classes, which eventually led to differences and inequalities in cognitive development of children, respectively. It was also expressed that previous studies had rarely focused on these issues. Cheadle and Amato (2011) and Redford and colleagues (2009) investigated concerted cultivation as a joined measure of all proportions while Coulangeon (2018) and Dumais (2006) focused on a single aspect of concerted cultivation, such as children's participation in regulated leisure activities in their studies. Furthermore, few studies investigated how Lareau's theoretical ideas and concepts could be implemented to the early childhood context. The remarkable dimensions of socialization and education reflected in different approaches of parents to socialize, educate, and rear their children might change to some degree between early and late childhood. Kalil, Ryan and Corey (2012) indicated that parents

could adjust socialization, education, and child-rearing behaviors according to the age of their children. Hofferth (2008) and Kalil and colleagues (2012) reported that compared to older children, preschoolers' leisure time more likely involved direct interactions between parents and children, and parents might apply tighter controls over preschoolers' leisure time. Hence, theorists and researchers maintained that socialization and education of pre-schoolers might receive a distinctive form than that of school children, and that parents might cognitively stimulate, nurture and develop their preschoolers at home to a certain extent. In order to test this assertion and argument, panel data was used and the following research questions were addressed: (1) Can parents stimulate, nurture and develop their children cognitively during socialization, education, and concerted cultivation processes at the age five? (2) Do parents engage their children in regulated leisure activities at age five? (3) During the processes of socialization, education and concerted cultivation, can cognitive stimulation, nurturing and development of five-year-old children at home and their participation in organized leisure activities explain the cognitive skill inequalities, differences and gaps between first grade students from different socioeconomic statuses and origins at the age of seven?

The study focused on and sought answers to these questions in order to test the proposed theoretical perspective and also to contribute to the relevant literature. Firstly, researchers investigated how cultural activities could contribute more to children's cognitive development and discussed the relative explanatory power of parental investment in their children as (1) involving children in organized leisure activities and (2) cognitively stimulating, nurturing, and developing children at home. Parental investments and cultural activities for children could pave the way for children's learning. Children were able to learn from their parents or in more non-official and constructed environments such as music education lessons and sports education lessons. Nevertheless, prior studies scarcely examined these two processes, namely (1) children's learning processes from parents and (2) learning processes from organized leisure activities such as music and sports classes. Secondly, it was expressed that little information existed on the transfer of Lareau's research findings from the United States conditions to other cultural environments, such as Germany, where regulated leisure activities were supported by the government. Bodovski and Farkas (2008) and Covay and Carbonaro (2010) indicated that most previous research on child socialization, education, and concerted cultivation relied on data from the United States. Thirdly, three different measures of cognitive skills of children were used in the current study, including math test points, reasoning skills, and ability to focus and concentrate on a task. While reasoning skills and concentration skills were considered and regarded as an important foundation for children's academic achievement, previous research depended on academic test points or basic

cognitive competence tests to measure and determine the association of socialization, education and concerted cultivation with cognitive skills.

## **Educational Reproduction in the Society through Socialization, Education and Child-Rearing**

### **Concerted Cultivation and Accomplishment of Natural Growths**

As per Lareau's notions and concepts, cultural diversities in parenting strategies such as socializing, educating and child-rearing related to and based on socioeconomic status and social class might explain distinct and diverse developmental paths of children (Lareau, 2003). In her research on families, Lareau asserted that parents' perceiving of what children needed for accomplished development differed and were stratified by socioeconomic status and social class. Lareau specified two distinct and diverse socialization and education strategies, called concerted cultivation and accomplishment of natural growth. Child socialization and education strategies were defined and determined as a comprehensive concept for a set of parental socialization and education behaviors and parental investments that pursued a general objective. Middle-class parents demonstrated a tendency to engage in socializing, educating, and nurturing behaviors such as involving their children in regulated activities planned and devised by adults as well as reasoning, discussing, conferring and interfering in school on behalf of and for the benefit of their children. Contrarily, parents in working-class tended to allow and provide opportunities for their children to play a lot of free games, employ many orders and directives in their speeches with their children, and rarely contact and communicate with the school (Lareau, 2002). Lareau, indicated that these diversities in socialization, education, and child-rearing revealed a switch mechanism via which parents in higher socioeconomic status and social class conveyed and presented their advantages to their children by means of increased academic and school success of their children. Calarco (2014) and Lareau (2002) emphasized that growing up and being raised under socialization, education, and concerted cultivation could teach children cognitive and non-cognitive skills that could later be worthwhile in their relationships and interactions with teachers at school.

Cheadle and Amato (2011) attempted to understand and explain the details of the idea, understanding and concept of concerted cultivation using survey data in their quantitative studies. Bodovski and Farkas (2008) and Covay and Carbonaro (2010) revealed that parents' socialization, education, and concerted cultivation of their children mediated the association between parental social class and educational skills of children in their studies. All the same, few studies explored Lareau's ideas, understanding, and concepts about the strategies that parents pursued to socialize, educate, and rear their

children outside the works such as Coulangeon' (2018) study in France, Matsuoka and colleagues' (2015) study in Japan and Sjodin and Roman' (2018) study in Sweden. Thus, it was argued that the extent to which theoretical ideas and concepts of Lareau could be implemented to other cultural conditions, such as Germany, remained widely unknown. Moreover, Bodovski and Farkas (2008) and Covay and Carbonaro (2010) mostly focused on the socialization, education, and rearing of school children in their studies. Cano and colleagues (2019) and Hsin and Felfe (2014) also employed samples of older children in their studies. It was also highlighted that there were fewer studies focusing particularly on the socialization, education and concerted cultivation of preschool children.

### **Socialization, Education and Concerted Cultivation in the Form of Children's Participation in Organized Leisure Activities**

Lareau asserted that the most remarkable diversities between socialization, education and concerted cultivation of children and accomplishment of natural growth were the regulating and organising of children's daily lives. Parents in middle-class tended to engage their children in a few regulated leisure activities devised by adults, and thus established very constructed daily routines for their children and sought to socialize, educate, and rear them within these daily routines. Constructed and regulated leisure activities correspond classroom environments in certain ways, such as consistency, clear rules, and adult guidance. Thus, engaging children in regulated leisure activities could prepare children for learning in the classroom. Therefore, by attending and joining in regulated leisure activities, children were able to enhance their cognitive skills by virtue of stimulation and encouragement, and also learn how to pursue rules, performing in front of audiences, or interacting with other people (Lareau, 2003). Moreover, Covay and Carbonaro (2010) indicated that thanks to being socialized and educated in organized leisure environments, children were able to gain skills such as persistence and a powerful work morality. Such skills could bestow benefits to children in school and classroom environments. While the accomplishment of natural growth in the form of unconstructed free play could allow and enable development and acquisition of skills such as creativity and resolving conflicts between peers, it was denoted that these skills did not bring about the same profits in school (Lareau, 2003). On that account, while both parental strategies related to socializing, educating, and nurturing children could result in skill development of children, middle-class socialization, education, and nurturing strategies might be more influential in teaching children the skills that would be most beneficial in the school environment.

Consistent and compatible with Lareau's theory, Carolan (2016), Cheadle and Amato (2011) and Coulangeon (2018) reported that there was convincing



evidence indicating that engaging school children in regulated leisure activities was associated with parents' socioeconomic status or social class their studies. While Lareau based her thesis and argument on the number of regulated leisure activities, in their studies on socialization, education and concerted cultivation, Coulangeon (2018) and Dumais (2006) analyzed distinct and diverse regulated leisure activities rather than a bare total point. These studies posited that not all concerted leisure activities contributed equally to the development of children's skills. A study using a sample of sixth-grade students conducted a detailed examination and demonstrated with a fixed-influences regression that out of eight concerted leisure activities, only three activities, namely public library affiliation, attendance at a music school, and participation in music activities at school, were associated with higher grades in mathematics and French (Coulangeon, 2018).

Previous studies most commonly explored participation in sporting events and musical events as organized leisure activities. At this point, Cabane and colleagues (2016), Felfe and colleagues (2010) indicated that strong evidence existed that both participating in both sports events and musical activities supported school success. Nevertheless, it was asserted that participation in these two organized leisure activities, namely sports and music activities, varied in several aspects and therefore might support school success by developing cognitive and non-cognitive skills through distinct and diverse channels. Felfe and colleagues (2016) and Pfeifer and Cornelißen (2010) suggested that participation in sports activities indirectly affected educational outcomes via numerous channels ranging from health to soft skills, such as team and teamwork, dealing with and overcoming criticism and competition, following and adhering to rules and instructions, on the one hand, to behavioral habits, such as motivation, stimulus, strict discipline, effort, patience, tolerance and perseverance, on the other hand. Contrarily, studies focusing on music generally discussed music activities within the context of the development of cognitive skills. Schellenberg (2004) suggested that musical training stimulated, nourished and developed cognitive skills, such as intelligence while Forgeard and colleagues (2008) reported that music activities associated with auditory discrimination abilities in their studies. Ho and colleagues (2003) indicated that musical training developed verbal memory. Moreno and colleagues (2011) also reported that music activities related to executive functioning. However, Cabane and colleagues (2016) highlighted that being musically active might be associated with non-cognitive skills such as openness to experience in their studies. Researchers explored whether sports and music activities contributed to school success through the same mechanisms and arrived at the conclusion that adolescents' music activities appeared to have greater gains and rewards than participating in sporting events, especially in terms of basic cognitive skills (Cabane et al.,

2016). Kaviani and colleagues (2014) and Schellenberg (2004) posited that the positive relationship between music activities of children and their cognitive skills could also be determined employing an experiential design. However, Sala and Gobet (2017) reported that the influence of musical education on cognitive skills of children and adolescents was quite minimal. Nevertheless, these researchers pointed out that the influence of musical education might differ depending on the consequence measure and, for intelligence, for example, they reported an influence magnitude of Cohen's  $d = 0.35$ .

While there was strong evidence that engagement in regulated leisure activities of school children contributed to their skill development, it was indicated that fewer studies had focused on participating in regulated leisure activities of children along preschool years. It was asserted that child socialization, education and rearing strategies defined by Lareau could structure the leisure-related preschool children's experiences. In a particular study, Hofferth (2008) revealed that 5-year-olds' leisure time could much more impacted by their parents' demands, than school children experiencing the ever-increasing impact of their peers. Furthermore, it was highlighted that participation in regulated leisure activities at an early age was especially beneficial for cognitive skill development of children. National scientific board on the developing child (2007) also posited that brain sensitivity to the developing and improving of certain cognitive skills was greatest at young ages. Lareau (2011) and Schmidt and colleagues (2017) indicated that at the age of intensive socialization and education of children, it appeared that there was a growing trend to engage children in regulated leisure activities at young ages.

Some studies also denoted that concerted cultivation, as a socialization and education strategy of parents in higher socioeconomic status and social class was already visible in early childhood. Researchers found that parents' socioeconomic status and social class were associated with the participation of young children in regulated leisure activities (Carolan, 2018; Sjodin & Roman, 2018). However, few studies explored to what degree and to what extent children's participation in regulated leisure activities at a young age contributed to greater development and enhancement in their cognitive skills. An analysis of kindergarten children revealed that the count of regulated leisure activities of children along the pre-first grade years was associated with their first grade reading and math points (Carolan, 2018). Conversely, a study on a sample of children aged 0-12 years utilized a fixed-influences estimation model but could not find any significant association between time spent on regulated leisure activities and measures of cognitive ability (Hsin and Felfe, 2014). Nonetheless, the study discovered a positive association between time spent on leisure activities and behavioral consequences for older children compared to children as young as six. In like manner, one study that used time

diaries of children aged 4-8 did not notify any significant association between time spent for constructed activities and vocabulary test points of children (Cano et al., 2019). Still, as notified by studies on school children, a total point of all regulated leisure activities or time spent on all regulated leisure activities was used. This total score might mask the potential differential influences of single regulated leisure activities. On that account, it was pointed out that it remained unclear to what degree and to what extent certain regulated leisure activities along early childhood contributed to diversities in cognitive skills and thereupon the advantages stemming from socioeconomic status and social class presented and transferred to children.

### **Concerted Cultivation in the Form of Parents' Stimulating, Nurturing and Developing Children's Cognitive Skills at Home**

Lareau discovered a high degree of children's participation in organized leisure activities in middle socioeconomic status and in middle social class and she also monitored that parents in middle socioeconomic status and middle social class, contrary to parents in working-class, exerted more effort to stimulate, nurture and develop their children cognitively at home. Parents in middle socioeconomic status and middle social class perceived their responsibilities and obligations more to actively improve and enhance their children's skills (Lareau, 2011). Especially, when the idea, understanding and concept of concerted cultivation was applied to the early childhood context, the utmost salient dimension of concerted cultivation might vary depending on parents of different socioeconomic status and social class background. Consistent and compatible with Lareau's theory, according to Becker and Biedinger (2016), Bradley and Corwyn (2002), Conger and Donnellan (2007) and Feinstein and colleagues (2008) the family investment model posited that the switch channel through which parents conveyed socioeconomic status and social class positions to their children was via parents' ability to cognitively stimulate, nurture, and develop their children at home in their studies. Accordingly, theorists and researchers addressed socialization, education and concerted cultivation strategy of parents to develop, enhance and boost children's abilities and skills in early childhood on every occasion and in every environment. Bodovski (2010), Kaiser and Diewald (2014) and Pensiero (2011) pointed out to what extent parents followed the socialization, education and concerted cultivation strategy and exerted efforts to stimulate, nurture and develop their children at a cognitive level at home, which was visible in the core and main dimensions expressed by Lareau

A long-lasting tradition in early childhood research explored the extent to which the learning setting at home could account for differences, inequalities, and gaps in cognitive skills in children as per parents' socioeconomic status and social class. Anders and colleagues (2012), Kluczniok and Mudiappa

(2018) and Niklas and Schneider (2017) demonstrated that parents of higher socioeconomic status and social class provided a home environment that was more cognitively stimulating, nurturing, and developing for their young children, such as reading to them, engaging in frequent speeches with them, and helping them learn colors and thus provided and secured them an advantageous start in school in their studies. In earlier studies, Duncan and colleagues (1994) and Melhuish and colleagues (2008) focused on a set of distinct and diverse home activities while Milkie and colleagues (2015) addressed time spent with parents in the home environment. In more recent studies, however, Cano and colleagues (2019) and Hsin and Felfe (2014) underlined that only particular activities in the home setting, such as parent-child educational activities, contributed to cognitive skill development of children. Employing a fixed-effects approach, a study determined that parents' time spent on educational activities with their children was significantly related to cognitive abilities of children; however, that was not the case for parents' time spent with their children on unconstructed activities (Hsin & Felfe, 2014). The supposition underpinning this literature bore similarities to Lareau's assertion and discussion regarding regulated leisure activities. Hsin and Felfe, (2014) indicated that with adult guidance, constructed activities might bestow greater benefits to school-related outcomes compared to unconstructed activities.

### **Engaging Children in Organized Leisure Activities and Stimulating, Nurturing and Developing Their Cognitive Skills at Home**

While studies investigated the benefits of engaging children in regulated leisure activities and parents' cognitive stimulation, nurturing, and development of their children at home, few studies could provide an explanation for and throw light on the relative importance of the growth and augmentation of early-life cognitive skill differences, inequalities, and gaps according to parents' socioeconomic status and social class origin. In their studies, Cano and colleagues (2019) and Hsin and Felfe (2014) showed that it was not the total of organized leisure activities, but rather engagement in activities, such as reading to children, that could yield beneficial outcomes for children and stimulate, nurture, and develop them cognitively. Nevertheless, a study examined a single organized leisure activity rather than a total point and discovered that children's attending music classes and lessons, not the factor point of the home learning setting, predicted best their math points (Funk & Kemper, 2016). A probable explanation for these contradictory and inconsistent results could be that not all regulated leisure activities, or not all parental efforts to stimulate, nurture, and advance their children cognitively, would contribute to cognitive skill development of children. Consequently, there was a need to distinguish both the specific form of organized leisure activities as parental investment and the specific form of parental efforts to

stimulate, nurture and enhance cognitive development when investigating cognitive skill development of children.

### **The Present Study**

The present study implemented Lareau's idea, understanding, and concept of concerted cultivation to preschool children transitioning to primary school. Her idea, understanding and concept of concerted cultivation were expanded to the extent of parents' stimulating, nurturing and developing their children cognitively at home. A bridge was tried to be built between the two theoretical frameworks, namely the concept of concerted cultivation and investment of parents. The study particularly aimed at testing the following hypotheses:

(1) Parents' socioeconomic status and social class background were supposed to be positively associated with children's engagement in regulated leisure activities. (2) Engaging preschool children in diverse regulated leisure activities was expected to mediate the impacts of parents' socioeconomic status and social class origin on later differences and inequalities in children's cognitive abilities. Otherwise stated, preschool children's participation in diverse types of regulated leisure activities would mediate the relationship between parents' social class origin and later differences and inequalities in children's cognitive abilities. (3) Parents' socioeconomic status and social class background were assumed to be positively associated with parents' cognitive stimulation, nurturing, and development of their preschool children at home. (4) Parents' cognitive stimulation, nurturing, and development of their preschool children at home were expected to mediate the impacts of parents' socioeconomic status and social class background on later differences and inequalities in children's cognitive abilities. Otherwise stated, parents' cognitive stimulation, nurturing, and development of their preschool children at home would mediate the relationship between parents' socioeconomic status origin or social class origin and subsequent differences and inequalities in cognitive abilities of children.

The present study sought to test (1) the extent to which Lareau's theoretical framework could be generalized to other cultural conditions and age cohorts employing data related to kindergarten children in primary education establishments. (2) The study also endeavored to test whether concerted cultivation as a socialization and education strategy of more well-educated parents in the preschool period echoed an additional dimension of cognitive stimulation, nurturing, and development of their children at home. (3) Studies pointed to arguments and assertions that specific socialization, education and child-rearing behaviors, rather than a full set of behaviors, could guide and increase the cognitive skill differences, inequalities and gaps observed among children from different socioeconomic status and social class backgrounds

(Pensiero, 2011). Thus, this study aimed to contribute to the information about the relative significance of learning in two distinctive environments, namely learning at home with parents and learning in regulated leisure activities, by distinguishing and differentiating specific activities. (4) The study also attempted to measure and determine children's cognitive abilities through academic test scores and measures of reasoning and concentrating skills.

## **Data and Methods in the Study**

### **Data**

The analysis was based on the National Educational Panel Study (NEPS), a multi-cohort study to explain and throw light on life-long educational processes. Data collection began when children were approximately four years old, and the data provided comprehensive knowledge about not only home learning environments and day-care facilities and services of children but also their cognitive skill and ability development. In the first wave of the study, when the children occurred four years old, general knowledge about the family structure, family resources, children's gender, age and health conditions was collected from the parents through a survey. Information related to leisure time activities and cognitive consequences of children was acquired in the second wave of the study when the children were at the age of five, and in the fourth wave of the study when they were seven.

### **Variables in the Study**

#### **Core Variables**

The study endeavored to measure math skills, concentrating skills, and basic reasoning skills of children in order to determine their cognitive skills as three dependent variables. Researchers measured math skills with a standardized math aptitude test (Warm, 1989) devised for preschoolers by the National Education Panel Study (NEPS). This math aptitude test was improved to develop an ability to implement mathematics to real situations. Neumann and colleagues (2013) and Schnittjer and Duchardt (2015) indicated that the test covered four content fields including (1) quantities, (2) change and associations, (3) shape and space, (4) data and chance on the one hand, and six abilities areas including (a) discussing, (b) communicating, (c) modelling, (d) problem solving, (e) representing and (f) implementing technical skills on the other hand. Interviewers read the test items to the children and often presented the task employing explanatory materials, such as counting stones, while testing them.

Within the framework of basic nonverbal cognitive abilities of children, Haberkorn and Pohl (2013) measured and determined children's reasoning

skills through a standardized test composed of two six-item sets each in their studies. Each item of the standard test comprised a matrix of geometric items with only one empty field. Children drew conclusions with logical rules on patterns and examples of geometric elements to choose the correct completion for the empty area from the solutions presented. Children were given three minutes to disentangle each set. Concentrating skills were assessed based on the response given by the day-care teacher to the following question: “Compare ‘the target child’ with same-age peers: Is his/her energy and ability to focus and concentrate much worse, slightly worse, the same as, slightly better, or much better than his/her same-age peers? (e.g., his/her ability to do something for extended periods of time)” The response categories varied between 1 (much worse) and 5 (much better).

Researchers measured and determined concerted cultivation with two forms of parental investment. In order to designate concerted cultivation and parental investments, they used 4 items evaluating participating in regulated leisure activities of children and 6 items evaluating cognitive stimulation, nurturing and development of children at home. Regulated leisure activities were assessed in Wave 2 when children were at the age of five by inquiring parents whether their children were presently participating in any orderly activity outside of kindergarten. Regularly organized leisure activities in the questionnaire were measured and assessed using various items related to sports activities such as gymnastics, floating, sports clubs, horse riding lessons, and music activities, such as music lessons, music clubs, music schools, on the one hand, and courses for learning a foreign language and another activities, such as painting, dancing and ballet, on the other. Participation in language courses and classes was included in the “other” category, as it was very infrequent. Therefore, three events were used as sports, music and other activities.

In the study, the variable of cognitive stimulation, nurturing, and development of children at home was measured and evaluated based on parents’ notifies of how frequently they were engaged in home learning activities with their children. Data containing information on activities such as reading to children, painting, crafts, skills, drawing, letters activities, numbers activities, teaching songs, rhymes and poems, and visiting the library were used in Wave 2 of the study. Owing to partial or directional distributions, the eight response categories were condensed and transformed into two categories, as ‘every day’ and ‘less than every day’. In general, parent-child reading occurred the most widespread and common activity. 73 % of parents reported that they were reading to their children on a day-to-day basis. Aminipour and colleagues (2018) indicated that library-related items should be excluded as they were very infrequent activities during the preschool period at 5 years of age and were thereby unsuitable for measuring parents’ cognitive stimulation, nurturing and development of their young children.

## **Independent Variables**

Family socioeconomic status and social class were determined with a variable designating whether at least one of the parents possessed a tertiary level of education in Wave 1 of the study. In their studies, Duncan and Magnuson (2003) and Linberg and Wenz (2017) indicated that a single indicator of socioeconomic status and social class, rather than a composite score, was used owing to the fact that results tended to differ depending on the indicators that were employed.

Researchers focused on the education of parents on account of theoretical and empirical reasons and asserted that parent education could best achieve different cultural orientations rather than just objective resources, limitations and difficulties (Weininger, Lareau & Conley, 2015). It was stated that parental education could influence and determine parental values and beliefs that could derive and provide parental strategies for socializing, educating, and rearing children. Otherwise stated, parental education could best demonstrate parental values and beliefs from which their socialization, education, and child-rearing strategies derived and provided (Bradbury et al., 2015). Besides, in their studies, Duncan and Magnuson (2003) and Hoff and colleagues (2002) often revealed that parental education most reliably predicted differences in child socialization, education, and rearing. Furthermore, König and colleagues (1988) asserted that parental education was very consistent across individual life courses than income or vocation, which might fluctuate and change over time, particularly in families with young children. The educational level and qualifications as well as occupational status and qualifications of the parents were defined and determined based on the CASMIN Educational Classification.

## **Controls**

To reduce trends and biases arising from excluded variables in the study, child-level controls were taken into consideration. In Wave 1 of the study, caregivers reported educational activities of children in day-care facilities and services, such as looking at picture books, confronting and arraying, classifying, assembling and construction games, riddles, puzzles, and number games, and then the total score for five items related to these educational activities were measured. Parents subjectively reported their children's general health. The children's gender and their age in months were also determined. The research specified and assessed family income on a scale varying in steps of 1,000 Euros, conforming with and equivalent to OECD standards. The migration background of the responding parents, the count of siblings in the family, the mother or father living alone at home, and mothers weekly working hours were also determined and defined.



## Results

In the study, percentiles of children engaged in regulated leisure activities according to education of parents were offered in Table 1.

**Table 1** Percentiles of children engaged in three regulated leisure activities according to education of parents

| Other activities             |      |
|------------------------------|------|
| No tertiary education degree | % 30 |
| Tertiary education degree    | % 36 |
| Music activities             |      |
| No tertiary education degree | % 26 |
| Tertiary education degree    | % 52 |
| Sports activities            |      |
| No tertiary education degree | % 68 |
| Tertiary education degree    | % 86 |

Note: Percentiles of children participated in regulated leisure activities (Wave 2) according to education of parents. They were based on weighted observed data. N = 1,625 for Sports, N = 1,624 for Music, N = 1,624 for Other activities. There were significant differences between families who had lower education and families who had higher education in terms of children's participating in sports activities, participation in music activities, and participation in other activities at the  $p < .05$  level (Mikus, Tieben, & Schober, 2021, p. 6).

Children from families who had higher education had significantly higher rates of participating in regulated leisure activities. The maximum difference was observed in participation in music events. When compared to lower educated families, 52 % of children from families who had higher education attended regulated music events, whereas the percentage of children from families who had lower education participating in regulated music events was halved, dropping to 26 %. Contrary to expectations, it was observed that children from families who had higher education were not significantly engaged in cognitively stimulating, nurturing and enhancing activities, other than reading for children on a daily basis (Table 2).

**Table 2** Percentages of children exposed to and engaged in daily cognitively stimulating, nurturing and developing activities by parental education

| <b>Learning songs</b>        |      |
|------------------------------|------|
| No tertiary education degree | % 13 |
| Tertiary education degree    | % 8  |
| <b>Painting activities</b>   |      |
| No tertiary education degree | % 33 |
| Tertiary education degree    | % 25 |
| <b>Letter activities</b>     |      |
| No tertiary education degree | % 41 |
| Tertiary education degree    | % 37 |
| <b>Number activities</b>     |      |
| No tertiary education degree | % 43 |
| Tertiary education degree    | % 37 |
| <b>Reading</b>               |      |
| No tertiary education degree | % 67 |
| Tertiary education degree    | % 84 |

Note: Percentages of children who were exposed to and engaged in daily cognitively stimulating nurturing and developing activities.(Wave 2) by education of parents . They were based on weighted observed data. N = 1,632 for Reading activities; N = 1,628 for Number activities; N = 1,629 for Letter activities; N = 1,632 for Painting activities; N = 1,630 for Singing activities. There were significant differences between families with lower education levels and families with higher education levels in terms of learning songs, painting activities, letter activities, and reading at the  $p < .05$  level (Mikus et al., 2021, p. 7).

As a comparison, 84 % of the higher-educated parents reported engaging in reading activities with their children every day, while a smaller percentage of the lower educated parents, 67 % to be exact, reported reading their children on a day-to-day basis. Nevertheless, compared to their higher educated peers, lower educated parents more frequently reported engaging in singing or painting activities with their children every day.

In the second step, the study explored the mean discrepancies in cognitive skills according to education of parents, children's participating in regulated leisure activities as well as daily cognitive stimulation, nurturing, and development of children. Cognitive skill points were obtained from Wave 4 of the study (N = 343). As anticipated, education of parents was significantly and positively associated with all three measures of cognitive skills of children, namely mathematics, reasoning and concentration. Besides, the results indicated that children who participated in regulated music activities had, on average, significantly higher scores on all of these cognitive skill measures, than children who did not participate in organized music activities. The greatest mean differences emerged in children's mathematics points with a standard deviation of .522. This was closely followed by differences in children's reasoning points with a standard deviation of .460, and differences in concentration scores with a standard deviation of .414. Likewise, children who participated in organized sports activities obtained higher mean scores on all three measures of cognitive skills, that is to say math, reasoning, and concentration, compared to children who did not attend in organized sports activities. All the same, the results proved that the mean discrepancies in math skills and concentrating skills were statistically significant, with a standard deviation of .533 and .252, respectively. It was also pointed out that children's participating in certain "other" activities was only significantly related to higher concentration skills, with a standard deviation of .220. With respect to cognitively stimulating, nurturing, and developing activities of parents, the study also established that only parents' reading for their children on a daily basis was significantly associated with higher average scores in math with a standard deviation of .401, in reasoning with a standard deviation of .341, and concentration skills with a standard deviation of .311.

### **Multiple Regression Analyses in the Study**

#### **Children's Participation in Organized Leisure Activities by Socioeconomic Status and Social Class, and Parents' Ability to Stimulate, Nurture and Develop Their Children Cognitively**

The first part of the multiple regression analysis sought to test (1) the assumption that parents' socioeconomic status and social class background were positively related to children's participation in organized leisure activities and (2) the assumption that preschool children's participating in different

types of organized leisure activities as well as parents' social class background mediated the impacts of later differences and inequalities in children's cognitive skills. In order to test these hypotheses, a logistic regression was employed for each indicator of concerted cultivation. The average marginal effects of parents' socioeconomic status and social class background on participation in organized sports, music, and other specific activities were displayed in Table 3.

**Table 3** Average marginal effect of family origin estimating participation in regulated leisure activities

|   | Participation in sports activities | Participation in music activities | Participation in other activities |
|---|------------------------------------|-----------------------------------|-----------------------------------|
| Tertiary education degree                 | 0.092**                            | 0.190***                          | 0.032                             |
| Standard errors (SE)                      | SE 0.034                           | SE 0.034                          | SE 0.037                          |
| <b>Control Variables for Family</b>       |                                    |                                   |                                   |
| Household income (log, in 1,000)          | 0.192***                           | 0.122**                           | 0.098*                            |
| Standard errors (SE)                      | SE 0.036                           | SE 0.040                          | SE 0.044                          |
| Migration background                      | - 0.091*                           | - 0.061                           | 0.031                             |
| Standard errors (SE)                      | SE 0.038                           | SE 0.042                          | SE 0.039                          |
| Not immigrant in the country of residence | 0.203***                           | - 0.007                           | - 0.062                           |
| Standard errors (SE)                      | SE 0.035                           | SE 0.047                          | SE 0.042                          |
| Mothers' working hours (hour/week)        | - 0.001                            | - 0.000                           | - 0.000                           |
| Standard errors (SE)                      | SE 0.001                           | SE 0.001                          | SE 0.001                          |
| No. of siblings in the household          | - 0.045**                          | 0.013                             | 0.055**                           |
| Standard errors (SE)                      | SE 0.014                           | SE 0.015                          | SE 0.018                          |
| Single parent in the household            | 0.082*                             | 0.081                             | 0.000                             |
| Standard errors (SE)                      | SE 0.038                           | SE 0.054                          | SE 0.047                          |
| <b>Control Variables for Children</b>     |                                    |                                   |                                   |
| Girl                                      | 0.021                              | 0.142***                          | 0.246***                          |
| Standard errors (SE)                      | SE 0.030                           | SE 0.033                          | SE 0.028                          |
| Child's age (in months)                   | - 0.006                            | 0.004                             | - 0.002                           |
| Standard errors (SE)                      | SE 0.003                           | SE 0.004                          | SE 0.004                          |
| Child's health                            | - 0.027                            | - 0.025                           | 0.051*                            |
| Standard errors (SE)                      | SE 0.023                           | SE 0.023                          | SE 0.026                          |
| N   | 1,632                              | 1,632                             | 1,632                             |

Note \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ , Source: NEPS SC2 v6-0-1 (Mikus et al., 2021, p. 7).

(1) Consistent and compatible with the assumption that parents' social class background are positively related to participation of children in regulated leisure activities, the results revealed that children from families who had higher education were, on average, more organized compared to their peers

of lower educated parents. As far as children from families who had higher education were concerned, the likelihood of participating in sports events was around 9 percentage points higher and that participating in organized music activities was approximately 19 percentage points more likely. In the study, no significant differences were observed between children from families who had higher education and their peers from families who had lower education in terms of their participation in certain “other” organized leisure activities.

Table 4 demonstrated the average marginal effects of parents’ socioeconomic status and social class background on five different cognitively stimulating, nurturing and developing parental activities, including (1) reading activities, (2) number activities, (3) letter activities, (4) singing activities and (5) painting activities, which showed the second measure of concerted cultivation.

**Table 4** Average marginal effects of socioeconomic status and social class background predicting stimulating, nurturing and developing activities at home

|   | Reading activities | Number activities | Letter activities | Learning songs | Painting |
|---|--------------------|-------------------|-------------------|----------------|----------|
| Tertiary education degree                 | 0.122**            | - 0.107**         | - 0.060           | - 0.057*       | - 0.034  |
| Standard errors (SE)                      | SE 0.037           | SE 0.040          | SE 0.037          | SE 0.028       | SE 0.039 |
| <b>Control Variables for Family</b>       |                    |                   |                   |                |          |
| Household income (log, in 1,000)          | 0.103**            | 0.105*            | 0.045             | 0.044          | - 0.063  |
| Standard errors (SE)                      | SE 0.039           | SE 0.043          | SE 0.044          | SE 0.029       | SE 0.048 |
| Migration background                      | - 0.072            | - 0.014           | - 0.002           | 0.088***       | 0.078*   |
| Standard errors (SE)                      | SE 0.039           | SE 0.035          | SE 0.035          | SE 0.024       | SE 0.033 |
| Not immigrant in the country of residence | 0.073*             | - 0.004           | 0.021             | 0.031          | 0.074    |
| Standard errors (SE)                      | SE 0.030           | SE 0.047          | SE 0.044          | SE 0.033       | SE 0.043 |
| Mothers’ working hours (hour/week)        | - 0.001            | - 0.000           | 0.003*            | - 0.000        | 0.001    |
| Standard errors (SE)                      | SE 0.001           | SE 0.001          | SE 0.001          | SE 0.001       | SE 0.001 |
| No. of siblings in the household          |                    | 0.006             | - 0.012           | 0.027*         | - 0.003  |
| Standard errors (SE)                      | SE 0.014           | SE 0.016          | SE 0.017          | SE 0.012       | SE 0.017 |
| Single parent in the household            | - 0.070            | 0.002             | - 0.002           | 0.005          | 0.017    |
| Standard errors (SE)                      | SE 0.047           | SE 0.058          | SE 0.058          | SE 0.041       | SE 0.058 |
| <b>Control Variables for Children</b>     |                    |                   |                   |                |          |
| Girl                                      | 0.036              | 0.034             | 0.079*            | 0.049*         | 0.070*   |
| Standard errors (SE)                      | SE 0.030           | SE 0.034          | SE 0.031          | SE 0.023       | SE 0.032 |
| Child’s age (in months)                   | - 0.000            | - 0.012**         | - 0.002           | - 0.002        | - 0.008* |
| Standard errors (SE)                      | SE 0.003           | SE 0.004          | SE 0.004          | SE 0.003       | SE 0.003 |

|                      |          |          |          |          |          |
|----------------------|----------|----------|----------|----------|----------|
| Child's health       | 0.001    | - 0.005  | - 0.044  | 0.016    | - 0.003  |
| Standard errors (SE) | SE 0.025 | SE 0.023 | SE 0.026 | SE 0.021 | SE 0.024 |
| N                    | 1,632    | 1,632    | 1,632    | 1,632    | 1,632    |

Note \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ , Source: NEPS SC2 v6-0-1 (Mikus et al., 2021, p. 8).

As expressed in Hypothesis 2, which stated that preschoolers' participation in distinctive types of regulated leisure activities would mediate the effects of parents' socioeconomic status and social class origin on later differences and inequalities in children's cognitive abilities, more highly educated parents were most likely and more often expected to provide their children with activities at home that stimulated, nurtured and developed them cognitively. The study determined that reading to 5-year-olds from families who had higher education were around 12 percentile points more likely, on average, to be read to on a day-to-day basis. This was consistent and compatible with expectations. Nevertheless, it was observed that higher educated parents could significantly fewer to teach their children to sing songs or play number games with them on a daily basis. Unexpectedly, no significant differences could be found in the study regarding cognitively stimulating, nurturing and developing activities with letters by education of parents.

### **Participating in organized leisure activities and parents' cognitive stimulation, nurturing and development as mediators**

In the second part of the analysis, researchers tested Hypotheses 2, which stated that preschool children's participation in diverse types of organized leisure activities mediated the impacts of parents' socioeconomic status and social class origin on later differences and inequalities in children's cognitive abilities, and Hypotheses 4, which stated that parents' stimulation, nurturing, and development of children mediated the impacts of parents' socioeconomic status or social class origin on later differences and inequalities in children's cognitive abilities (Table 3). Mediation hypotheses were tested by calculating dependent variable regressions for each of the three cognitive of cognitive skills as mathematics, reasoning and concentration. As illustrated in the second section of the analysis, education of parents was positively associated with only to participation of children in sports activities, music activities and reading for children on a daily basis. Thus, these three forms of parents' investment were potentially mediating variables that could elucidate differences and inequalities between children from families with changing educational levels, or between children from families who had lower education and those from families who had higher education.

The research sought to test the intended mediation with stepwise regressions. Firstly, the association between education of parents and cognitive

skills of children were estimated while checking for the baseline differences in skill measure from Wave 2 as well as children's migration background, home country, gender, and age in Models 1, 4, and 5. Children of parents with higher education demonstrated stronger improvement in math and reasoning skills between Wave 1 and Wave 4 of the study. There was a standard deviation of .389 in the difference specific to socioeconomic status and social class background in the development of children's math skills. Conversely, parental education did not estimate development in children's concentration skills. Secondly, additional common variables that might indicate potential common causes of the mediating and dependent variables were added to Models 2, 5, and 8. Some of these common variables showed potential mediators of the association between education of parents and cognitive skills of children that echoed the decrease in the coefficient of parents' education as a factor affecting the outcome. The study determined a positive association between family income and reasoning and concentrating skills of children with respect to parents' socioeconomic status and social class background. The migration background of parents was not significantly related to any specific development in cognitive skills of children.

In the third step, the deemed mediators of organized sports activities, regulated music activities, and reading to children on a daily basis were added to regression Models 3, 6, and 9. On the average, participation in regulated music activities was positively associated with children's increased math skill development with a standard deviation of .260, with reasoning skill development with a standard deviation of .299, and with concentration skill development with a standard deviation of .224. Neither participating in organized sporting events nor reading to children on a day-to-day basis appeared to be significantly related to development in any specific cognitive skills of children. Regarding the models estimating development in mathematics and reasoning skills, it was observed that the coefficient for the education level of the parents decreased when the mediators were inserted in Models 3 and 6 as a factor affecting the result. Nevertheless, neither participation in organized sports events nor reading to children on a daily basis was related to developments in any specific cognitive skills of children. The question of mediation was obsolete and was no longer used, as there was no significant association between the parents' socioeconomic status and social class background and children's concentration skills. Yet again, the study observed a drop in the relationship between parents' social class background and children's focus when the mediators were offered. In the full model estimating children's reasoning skills as Model 6, the coefficient for education of parents was even considered non-significant as a factor affecting the result. Hypothesis 2 was supported for the impacts of music on mathematics and reasoning skills, but not for the impacts of music

on children's concentration skills. Hypothesis 4 was not supported by the data as no relationship was observed between parents' reading to their children on a daily basis and cognitive skill development of children.

In the final step, indirect effects were calculated to explore the magnitude and significance of mediating by engaging children in regulated music activities at age five. The indirect influence arising from parental education in terms of children's mathematics skills through participation in organized music activities seemed significant at the 10 % level. The same indirect impact arising from parental education was true for basic reasoning skills through children's participation in organized music activities. The study indicated that participation in organized music activities could explain approximately 12 % of the association between education of parents and mathematics skills of children, whereas participation in organized music events explained approximately 17 % of the association between parental education and reasoning skills of children. These results confirmed support for Hypothesis 2, which stated that preschool children's participation in diverse types of organized leisure activities mediated the effects of parents' socioeconomic status and social class origin on later differences and inequalities in cognitive skills of children.

## Discussion

The current study contributed to understanding and explaining how educational inequalities amplified throughout transition from pre-school to primary school and how disadvantages were presented and transferred from parents to children in the society. Lareau's theoretical idea of concerted cultivation was employed to explain educational inequalities in the society and the disadvantages presented and transferred from parents to children. Lareau's theoretical idea and concept of concerted cultivation as a socialization and education strategy included a variety of socialization and education behaviors that were obvious in higher socioeconomic status and social class families. It also focused on continuous encouragement, nurturing and development of children's cognitive skills through such socialization and education behaviors. The study applied concept of concerted cultivation of Lareau, a socialization and education strategy that emerged from the observation and study of families who had school children, to the environment of preschool children. It was suggested that the theoretical scope of Lareau's concept of concerted cultivation be extended to match the preschool context. Theorists and researchers discussed that concerted cultivation was likely to be obvious already throughout early childhood, and that it reflected and involved participation in regulated leisure activities and cognitive stimulation, nurturing of parents and development of their children at home.

The current study analyzed panel data obtained from children in day



care to test the hypotheses. The first section of the analysis revealed that parental education, as a key element of socioeconomic status and social class, was positively associated with distinct and diverse indicators of concerted cultivation. Consistent and compatible with findings from Carolan and Wasserman' (2015) and Coulangeon' (2018) and de Moll and Betz' (2014) researches, children from families in higher social classes were more likely to participate in music and sports activities. The study established that only reading to children had a significant positive association with parents' socioeconomic status and social class, but not with other forms of parents' cognitive stimulation, nurturing, and development of their children at home. This particular finding seemed unexpected and surprising taking into consideration Guo and Harris' (2000) and Kluczniok and Mudiappa' (2018) and Niklas and Schneider' (2017) studies revealing a positive association between parents' socioeconomic status and social class and the home learning setting. That said, it was pointed out that these studies employed total points rather than single items, which might obscure the fact that only few types of parents' activities could moderate and enhance the observed relationship.

Another explanation for the findings obtained in the current study could be that parents from higher socioeconomic status and social classes focused on other cognitively stimulating, nurturing, and developing activities that were considered as more appropriate for these child groups in this early age and preschool period. As for example, in the instance of pre-schools in Germany, which are not chapter of the regular, official educational system like in the United States, it was pointed that the notion of teaching educational ingredient to children already before they started school was relatively recent (Knauf, 2019). Looking from a theoretical viewpoint, the results might elucidate why Lareau did not notify greater parental cognitive stimulation, nurturing and development practices at home as the essence and core of behaviors demonstrated by middle socioeconomic status and middle social class parents. Also, it was emphasized that the finding was consistent and compatible with the argument put forward by Schaub (2010), who maintained that parents' cognitive stimulation, nurturing and development of their children at home might have been a normative behavior at the end of the 20th century, and thus unassociated with the parents' socioeconomic status and social class.

In the second section, the analysis concentrated on the association between concerted cultivation and cognitive abilities of children. Consequences demonstrated that participation in only music activities, rather than sports activities, at age five had a significant positive relationship with cognitive skills of children at age seven. This finding was consistent and compatible with a previous study conducted by Cabane et al. (2016), who compared the benefits of sports and music events. Still, the finding seemed to be conflicting

with the results of Covay and Carbonaro' (2010) and Dumais' (2006) studies that established a positive association between dance or sports activities and reading and mathematics skills of children. Fairly extensive and large measurement of organized sports activities in the study might have obscured some of the positive relationships between parents' cognitive stimulation, support and nurturing of their children at home, and children's cognitive skill gains and acquisition. Certain sports activities might contribute to cognitive skill gains and acquisition. Moreover, it was indicated that sports activities undertaken by very young children could pave the way for and activate their motor or movement skills rather than cognitive skills when compared to sports training in later years of life. In view of the fact that samples, cultural contexts, and operationalizations might differ in various studies, some of these differences could elucidate the changing consequences. Research on certain mechanisms through diverse activities could contribute to explaining cognitive skill gains and acquisition of children.

Mediation analysis revealed that participation in music activities partly explained the diversities in reasoning and mathematics skills between children from lower socioeconomic status and social class origins and their peers from higher socioeconomic status and social class origins. However, a meta-analysis stated that the strong association between participating in music activities and math skills was quite larger (Cohen's  $d = 0.17$ ) than the relationship notified in the meta-analysis (Sala & Gobet, 2017). Parents' reading to their five-year-old children was associated with vocabulary, but not with development in all three sets of cognitive skills. In general, findings denoted that only a little set of socializing and nurturing behaviors of parents who had higher education was associated with actual cognitive skill gains and acquisition in children. All the same, it was emphasized that the clearest and most evident relationship of these activities with parental education resulted in predicting cognitive skill development of children. This indicated that parents who had higher education could employ the most beneficial practices and behaviors of socialization, education, and child-rearing.

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# Chapter 14

## **TURNITIN, PLAGIARISM, AI SIMILARITY INDEX AND AI-GENERATED CONTENT: A DISCUSSION**

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## 1. Introduction

In our higher education system, plagiarism is a serious problem. As a deterrent, plagiarism detection programs such as Turnitin are mobilized for use. Turnitin's similarity index is a warning for students who intentionally or unintentionally plagiarize. In this paper, we review scholarly findings and discussions about Turnitin. Currently, we have a new threat to academic integrity. That is AI-generated content. Turnitin developed an AI similarity index as a response.

## 2. Plagiarism

Plagiarism through Turnitin can be related to “poor research and citation skills, language problems, underdeveloped academic skills” (Meo & Talha, 2019, p.48). For students who are not good at quotation, Turnitin can be stressful (Dahl, 2007). When the students know that Turnitin will be used for plagiarism detection, they plagiarize less (Heckler, Rice, & Hobson Bryan, 2013). Furthermore, obvious acts of plagiarism are avoided by students through the use of Turnitin (Khoza, 2015). Although there may be unintentional acts of plagiarism that are left out, intentional and extreme forms of plagiarism do not go undetected through Turnitin (Bruton, & Childers, 2016). On the other hand, it is accepted that Turnitin is insufficient in identifying certain forms of plagiarism (Ali, 2013). For example, inserting tables as images rather than texts make a difference.

Mukasa et al. (2023) explore reasons for plagiarism detected by Turnitin and propose that “lack of interest” (with the subthemes, “lack of preparation and effort, low self-efficacy, poor studying techniques, and convenience of internet sources”); pressure of time with competing priorities” (with the subthemes such as “misplaced priorities, procrastination, high workloads, poor planning, competing interests, and the perception of availability of time at the start of the semester”; and “lack of understanding of the policy on academic honesty” (with the subthemes, “lack of awareness of plagiarism, lack of awareness of acceptable similarity, conflicting messages from tutors and confusion with high school learning” (p.1) are the reasons. Surahman, & Wang (2022) investigate the reasons for academic dishonesty, a related term and conclude that “Individual factors such as being lazy to learn, lack of ability, and poor awareness as well as situational factors including the influence of friends, the pressure of the courses, and ease of access to information were strongly associated with AD” (p.1535). On the other hand, the most common act of plagiarism is found to be “paraphrasing without referencing” (Fadlalmola et al., 2022).

As discussed by Hafsa (2019), “One group of researchers consider students as solely responsible for committing plagiarism. By this cohort of researchers,

students' lack of knowledge and skill in source acknowledgement, poor time management, busy schedule, procrastination, deficiency in academic writing, absence of ethical reasoning, attaining recognition- are mentioned as primary reasons of plagiarism. On the other hand, the other group of scholars brings forth the issue of responsibility of the educational institutions and academics as well" (p.102).

### 3. Turnitin and Plagiarism

Packages such as SafeAssign can be as useful as Turnitin (Hunt, & Tompkins, 2014), but they didn't reach Turnitin's popularity. Hill, & Page (2009) find that Turnitin is superior to SafeAssign in detecting plagiarism. We can note that still there are other plagiarism detection software in different countries (see Belli et al., 2020). One reason packages like Turnitin became so popular is the fact that they provide clear-cut similarity scores (Kaktiņš, 2019) that matches the quantitative expectations of the stakeholders. As such, Turnitin has the potential to mislead academia with its focus on plagiarism detection rather than writing skills development (Penketh, & Beaumont, 2014). The latter is consistent with the application of positive psychology ideas to educational settings.

Turnitin can be used for formative feedback concerning plagiarism detection and skills development (Bailey, & Challen, 2015; Halgamuge, 2017; Jenson, & De Castell, 2004; Johari et al., 2015; Özbek, 2016; Rolfe, 2011; Zaza, & McKenzie, 2018) through resubmissions (Rees & Emerson, 2009). For some, this can be considered as manipulating the system to students' advantage (Pavelich, 2019; Wright et al., 2008), but its formative use is invaluable.

Turnitin can also be used for other pedagogical purposes (Mphahlele, & McKenna, 2019) such as sharpening essay writing skills. Rather than a punitive tool, it can be used as a pedagogical tool (Abrahamson & Mann, 2018; Alajami, 2021; Bensal et al., 2013; Halgamuge, 2017). In this context, Li & Li (2018) use Turnitin for peer review in ESL classrooms, while Li (2018) and Li & Li (2017) take advantage of Turnitin by allowing peer review in freshman writing classes. Students are positive about using Turnitin for peer review (Li, 2018). Kostka, & Maliborska (2016) use Turnitin to provide feedback for ESL learners. Alharbi, & Al-Hoorie (2020) mobilize Turnitin for peer review of controversial vs. non-controversial essays to foster critical thinking. Draaijer, & van Boxel (2006) find that peer assessment for formative purposes is popular among students while that for summative assessment is not. On the other hand, Biggam, & McCann (2010) report a study whereby Turnitin does not help to improve writing skills, it is merely used for plagiarism detection. In such a case, getting a low similarity index becomes the major goal at the expense of other pedagogical objectives (Orlando et al., 2018).

Despite its advantages, Turnitin is not a cure-all solution for plagiarism (Sutherland-Smith, & Carr, 2005); while it acts as a deterrent (Rees & Emerson, 2009, Savage, 2004), training is necessary (Can, 2021). Ballard (2013), in this context, reports the success of an academic integrity module. Cox (2012) reports the effectiveness of a Turnitin workshop. Likewise, Starr, & Graham-Matheson (2011) recommend a “educate-first, detect-and-punish second, approach” (p.3). Training is also necessary for academic staff. Adekannbi, & Megwaonye (2020) recommend train-the-trainer workshops. Convergingly, Ranawella, & Alagaratnam (2017) propose that training academic staff about Turnitin and plagiarism will be useful. In Abdullah & Krebt (2018), an eight-week-long paraphrasing training is offered. Fischer, & Zigmond (2011) recommend the following to reduce plagiarism:

“(1) educating individuals as to the definition of plagiarism and its consequences through written guidelines, active discussions, and practice in identifying proper and improper citation practices; (2) distributing checklists that break the writing task into more manageable steps, (3) requiring the submission of an outline and then a first draft prior to the deadline for a paper; (4) making assignments relevant to individual interests; and (5) providing trainees with access to software programs that detect plagiarism.” (p.100).

Nevertheless, compulsory use of Turnitin is known to improve academic integrity outcomes (Baker, Thornton, & Adams, 2008; Betts et al., 2013; Chew et al., 2010; Daoud, Alrabaiah, & Zaitoun, 2019; Díaz Arce, 2015; Graham-Matheson, & Starr, 2013; Kiriakidis, 2012, 2013; Mphahlele et al., 2010; Villar-Mayuntupa, 2020; Waigand, 2019). But the use of Turnitin for plagiarism detection is far from automatic; it requires human discretion (Jones, 2008; Kale, 2020; Nova & Utami, 2018). It is a matter of information literacy (Alua et al., 2023; Brabazon, 2015; Diki & Dibendi, 2022; Lampert, 2004; Silvey et al., 2016) and ethics (Reed, Watmough, & Duvall, 2015; Vanacker, 2011). That students’ former works are collected leads to the assertion that Turnitin itself violates copyright laws (see Sharon, 2010).

How Turnitin has been received in non-Western settings is notable. Zheng (2021) reports a Chinese case study, while Ayon (2017) presents Lebanese data. Cortes-Vera et al. (2018) discuss the nationwide use of Turnitin in Mexico. Kumar et al. (2018), Pai & Parmar (2015), and Sutar (2017) share their findings on research about Turnitin perceptions from India. Dela Peña et al. (2020) is a research paper about Turnitin use in the Philippines. Arce (2016) reports a study from Ecuador. Sujee et al. (2015) based their Turnitin research on a South African context. Rashid & Rashid (2018) is a research study on Turnitin from Pakistan. Indonesian case studies are provided by Aisyah, & Sugihartati (2019) and Hapsari et al. (2020). Garba (2018) provides information about the situation in Nigeria.

Flynn (2010) notes that Turnitin mostly detects not deliberate attempts to plagiarize, but poor writing skills. If not used critically, Turnitin's practice depends on the proposition that all students are willing to cheat (Scheg, 2013). Pavelich (2019) proposes that Turnitin misses the main pedagogical objective: Comprehending the subject matter. Turnitin, instead, encourages us to be original.

One of the points that makes Turnitin popular among students is the availability of online feedback. Carruthers et al. (2015) find that

“students favoured electronic online feedback over traditional written feedback, citing a range of perceived benefits including ease of access, flexibility and convenience, the level of personalisation, timeliness, clarity, quality and quantity of feedback, the ability to re-access and review again and its ability to help improve academic writing style and facilitate feed-forward learning.” (np)

#### **4. Turnitin and AI-Generated Content**

AI-generated content is serious for academic integrity (Sullivan et al., 2023; Uzun, 2023). Recently, Turnitin introduced the AI similarity index. In our trials, it can identify AI plagiarism correctly. However, Arce (2023) reports otherwise. One interesting point is that papers high on the AI similarity index are low on the regular similarity index (see AlAfnan et al., 2023; Khalil, & Er, 2023; Kirtania & Patra, 2023; Lo, 2023; Perkins, 2023; Yeadon et al., 2023). Ventayen (2023) finds that AI-generated texts passed the regular similarity index test. More research is needed on this subject.

In this context, research on ChatGPT is mixed (see Currie, 2023; Gill et al., 2023): AlAfnan et al. (2023) find it accurate, while Sevgi et al. (2022) propose that it is not reliable. In our attempts to use it, we discovered sometimes it produces fake information, and it is hard to discern fake from real if you are not an expert.

#### **5. Conclusion**

Turnitin will continue to guide academic integrity, but obviously, training is necessary for all stakeholders of academic integrity including students and the faculty. The new AI programs are a challenge for academic integrity. The students should be warned that Turnitin has an AI similarity index. It should be accessible to students for formative evaluation. They would be able to revise their paper based on the feedback.

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# Chapter 15

## **INVESTIGATION OF THE RELATIONSHIP BETWEEN SCHOOL PRINCIPALS' ORGANIZATIONAL HAPPINESS LEVELS AND LIFELONG LEARNING TENDENCIES: HIERARCHICAL LINEAR MODELING (HLM) ANALYSIS**

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## Introduction

The need to be happy is an issue that has been considered since the early ages as a natural consequence of being human, and happy schools play a significant role in establishing a happy society. This reveals the need for school principals to be happy in the working environment (Collie et al., 2020; Hayes et al., 2022). The school principals need to be happy in their working environment in order to perform their profession successfully, to reflect positively on all stakeholders of the school and to enjoy being at school. In this respect, one of the factors affecting the organizational happiness of school principals is their ability to keep up with change (Cappelletti & Sajon, 2022; Heidmets & Liik, 2014; Liu, 2015; Stringer & Hourani, 2016). School principals, who manage schools transferring cultural accumulation and ensuring the socialization of individuals, are expected to be the initiator of change to have the competencies to adapt to this change (Beatty, 2007; Drago Severson, 2012; Eyal & Roth, 2011). This expectation stresses the importance of lifelong learning for 21st century school principals. This requirement reveals the skills of having the ability to access, use, analyze and construct information in different disciplines, to produce solutions for the problems they encounter, and to be open and willing to new and different ideas. Having these skills can positively affect the organizational happiness of school principals (Devos et al., 2007; Kanowski, 2022; Walker, 2019; Wells & Klocko, 2018). In this sense, understanding the extent to which the lifelong learning tendencies of school principals affect their organizational happiness is important in the attempts to establish a happy school. The studies in the literature have mostly focused on teachers' lifelong learning competencies (Aleandri & Refrigeri, 2014; Dolan, 2012) and students' lifelong learning tendencies (Lauzon, 2013; Pamfilie et al., 2012; Soares & Dias, 2019). However, it is seen that the studies on school principals are limited. In this sense, the aim of this study was to examine the effects of lifelong learning tendency on the organizational happiness of school principals, who are one of the important capitals of educational organizations. For this purpose, answers to the following questions were sought:

1. How much of the total variance in school principals' organizational happiness perceptions is at the school level and how much is at the individual level?
2. Do school principals' lifelong learning tendencies predict their organizational happiness?
3. What are the school principal and the school related variables that predict the organizational happiness of the school principals?

## **Theoretical Framework**

### ***Organizational Happiness***

Happiness is a subjective experience and is part of the social, interpersonal and theoretical context. Context plays an important role in happiness since the subjective experiences of individuals differs based on contexts, and organizational happiness is among these contexts (Pryce-Jones, 2010; Tian et al.,2015). Organizational happiness is used in the literature to refer to all emotions in the organization and the situation in which employee's positive emotions overcome negative emotions (Dutschke, 2019; Fredrickson, 2003; Seppala, 2016).

Since organizational happiness is important for the production both in quantitative and qualitative terms, the factors playing a role in the happiness of employees must be acknowledged (Wesarat et al., 2015). Organizational happiness entails the following three dimensions (Warr, 2007):

*Positive Affect:* refers to positive emotions such as joyful, joyful, full of life, peaceful, happy, proud, pleasant and satisfied.

*Negative Affect:* consists of negative emotions such as sadness, hopelessness, worry, embarrassment, restlessness, anger, stress, and feelings of uselessness and dissatisfaction.

*Fulfillment:* It contains features that stress the cognitive characteristic of organizational happiness and that individuals reflect on themselves, develop their personal qualities and discover their potential. Aspects such as enjoyment of work, performing activities that reflect their skills and potential, performing better, and having the opportunity to acquire new skills in the workplace can be considered as a part of this dimension.

### ***Lifelong Learning Tendency***

The concept of lifelong learning was introduced by Grundtvig in the 1800s. In the literature, lifelong learning is defined as the extension of education to the whole life of the individual (Billett, 2010; Boyer et al., 2014; Cornford, 2002; Crow, 2006). In fact, lifelong learning consists of all kinds of learning processes in which individuals participate based on their interests and needs. The environment and society in which the individual lives constantly change and education will not be sufficient in order to meet the demands of changing and renewed knowledge. In order to adapt to the changes, individuals need to be involved in learning from the beginning to the end of life. These changes have prompted learners to learn to know, to learn to be, to learn to do and to learn to live together (Bolhuis, 2003; Field, 2001; Gorard & Selwyn, 2005; Hager, 2004; Laal & Salamati, 2012). In terms of learning types, lifelong

learning includes formal learning, non-formal learning and informal learning.

In the literature, it is stated that the lifelong learner has the following characteristics: being able to organize self-learning, being active in the learning environment, bringing together the knowledge from different disciplines and adapt it to other fields, applying different learning strategies when necessary, involving himself/herself in the learning process, controlling the learning process, being open to innovation and change, using high-level thinking and mental skills in solving the problems throughout his life, and being willing to cooperate and work together by communicating effectively (Friesen and Anderson, 2004; Kirby et al., 2010; Rausch, 2003; Rogers, 2012; Wielkiewicz and Meuwissen, 2014).

The statement of “...which will make students happy and contribute to the happiness of the society...”, highlighted in the broad aims of education, specifies the critical aim of the educational institution for every society because the happiness of the students expands to the school, which is then reflected in the society with a diffusionist effect. Accordingly, all stakeholders of school community make contribution to organizational happiness including the school principal (Hanh & Weare, 2017; Park, 2015; Sargent & Hannum, 2005). In this case, it is necessary to examine the factors and effects of organizational school principals’ happiness. Based on this idea, it is aimed to investigate the effect of school principals’ lifelong learning tendencies on organizational happiness in this study.

## Method

### Sample

The universe of the study consisted of 923 school principals working in Sakarya in the 2022-2023 academic year. The sample size was calculated through the frequently used formula  $n = \frac{Nt^2pq}{d^2(N-1)+t^2pq}$  (Hair et al., 2006; Tabachnick et al., 2007). Since the sampling error of was .05 at the 95% confidence interval and the t value was 1.96, and the number of people in the universe was 923, we obtained that  $n = 271$  using the expression  $n = \frac{923 \cdot (1.96)^2 \cdot 0.5 \cdot 0.5}{(0.05)^2 \cdot (923-1) + (1.96)^2 \cdot 0.5 \cdot 0.5}$ . The stratified sampling method was employed to reach school principals working in different school types. In stratified sampling method, the universe is divided into independent groups called strata and a sample is randomly selected from these groups. The important issue here is to establish the sampling frame based on the strata which may be both a single variable or more than one variable (Christensen et al., 2014; Neuman and Robson, 2014; Onwuegbuzie and Collins, 2007).



Each school type, namely primary school, secondary school and high school, were regarded as a separate stratum. In the study, a proportional distribution approach was used in determining the number of the participants in strata. In this approach, the number of the participants selected from each stratum should be proportional to the number of the participants in the universe. The sample of the study and the distribution of the sample within the strata are shown in Table 1.

**Table 1**  
*Information on the Universe and Sample of the Study*

| Strata      | School Principals in the Universe |     | School Principals in the Universe |     |        |
|-------------|-----------------------------------|-----|-----------------------------------|-----|--------|
|             | N                                 | %   | N                                 | %   |        |
| School Type | Primary School                    | 425 | 46.05                             | 128 | 46.05  |
|             | Secondary School                  | 330 | 35.75                             | 113 | 35.75  |
|             | High School                       | 168 | 18.20                             | 30  | 18.20  |
|             | Total                             | 923 | 100.00                            | 271 | 100.00 |

The proportional distribution of the school principals in the sample is shown in Table 1. 128 school principals from primary school (46.05%), 113 school principals from secondary schools (35.75%) and 30 school principals from high schools (18.20%) were included in the sample. Thus, it was ensured that school principals working in different types of schools were represented in the sample.

### **Data Collection Tools**

The Lifelong Learning Scale developed by Wielkiewicz and Meuwissen (2014) and the Well-Being at Work Scale developed by Paschoal and Tamayo (2008) were used to collect data. In addition, some characteristics of the schools and demographic features of the participants were obtained. The Lifelong Learning scale used in the research consists of 16 items and a single factor. The 5-point Likert type scale ranges from 1 “never” to 5 “always”. The reliability value of the scale was 0.892. The Well-Being at Work Scale consists of 30 items and three dimensions: positive affect, negative affect and fulfillment. This three-factor structure explained 57.30% of the total variance and the reliability coefficients for the dimensions varied between 0.88 and 0.93. The Cronbach’s Alpha reliability coefficient was found as .82 for Lifelong Learning and as .77 for the Well-Being at Work Scale in this study.

### **Data Collection Procedure**

The data collection process started after obtaining permission from the Ministry of National Education. During the data collection process, face-to-face interviews were conducted by the researchers at the selected schools, the

scales were distributed to the school principals on a voluntary basis, and the completed scales were collected by the researchers. The data were collected between September-December 2018.

### Data Analysis

Since the data consisted of demographic data at the school level and school principal level, and data obtained from the scales mentioned above, the data exhibited a two-level structure. It is recommended to use multi-level models instead of single-level analyzes in analyzes with such data (Raudenbush et al., 2002). In this context, Hierarchical Linear Modeling (HLM) was employed in this study. A number of demographic data of the school principals and schools and lifelong learning tendency were considered as independent variables and organizational happiness as dependent variable. Accordingly, the school-level variables consisted of the school type and the socioeconomic environment of the school. The school principal level variables were lifelong learning tendency, organizational happiness, gender, educational status and work experience.

Level 1 (School Principals): (Organizational Happiness)  $ij = \beta_{0j} + r_{ij}$

Level 2 (Schools):  $\beta_{0j} = \gamma_{00} + u_{0j}$  (Model 1)

The analyzes of the data were performed based on the research questions. The first research question aimed to examine to what extent the total variance in the organizational happiness levels of school principals was explained by in-school factors and to what extent by factors between schools. In order to provide an answer to this question, the most basic (baseline) model was used. Thus, without specifying any independent variable, HLM analysis was conducted on the model with only the dependent variable. Accordingly, it was revealed to what extent the ICC (intraclass correlation coefficient) value, that is, the total variance in the dependent variable, was explained by the inter-school and intra-school factors.

(Organizational Happiness) $ij = \beta_{0j} + \beta_{1j}(\text{gender}) + \beta_{2j}(\text{educational status}) + \beta_{3j}(\text{work experience}) + \beta_{4j}(\text{lifelong learning tendency}) + r_{ij}$

$\beta_{0j} = \gamma_{00} + u_{0j}, \beta_{1j} = \gamma_{10}, \beta_{2j} = \gamma_{20}, \beta_{3j} = \gamma_{30}, \beta_{4j} = \gamma_{40}$  (Model 2)

The second and third research questions aimed to investigate the school and school principal factors that predicted organizational happiness. For this purpose, two HLM models were used. In the first model (Model 2), only the school principal related variables were analyzed as independent variables, while in the second model (Model 3), both the school principal and the school related variables were used as independent variables. Thus, the predictive power of only school related factors, including the lifelong learning tendency,

and the predictive power of lifelong learning tendency on organizational happiness when the school related variables were added were examined.

$$(\text{Organizational Happiness})_{ij} = \beta_{0j} + \beta_1(\text{gender}) + \beta_2j(\text{educational status}) + \beta_3j(\text{work experience}) + \beta_4j(\text{lifelong learning experience}) + r_{ij}$$

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{school type}) + \gamma_{02}(\text{socioeconomic environment}) + u_{0j}$$

$$\beta_{1j} = \gamma_{10}, \beta_{2j} = \gamma_{20}, \beta_{3j} = \gamma_{30}, \beta_{4j} = \gamma_{40} \text{ (Model 3)}$$

## Findings

The baseline model was used to answer the first research question. The ICC (intraclass correlation coefficient) value was calculated as 0.12 in the baseline model (Table 1). Accordingly, the difference between schools in terms of organizational happiness explained 12% of the total difference. Based on this finding, it can be argued that 88% of the total variance of the organizational happiness arose from the difference between school principals.

**Table 2**  
*Baseline Model (Model 1)*

| <i>Dependent Variable: Organizational Happiness</i> | Beta   | SH     |
|---|--------|--------|
| Constant  | 2.988* | .0286  |
| <i>Variance Levels</i>                              |        |        |
| Between-School Variance                             | 0.0292 | 0.0092 |
| Within-School Variance                              | 0.2650 | 0.0149 |
| Between-School Variance /Total Variance (ICC)       | 0.12   |        |
| N   | 271    |        |

\* p<0.001

The second research question focused on whether school principal-related and school-related variables predicted organizational happiness. In the first stage, only first-level control variables (gender, education status, work experience and lifelong learning tendency) were included in the analysis, and in the second stage, second-level variables (school type and socioeconomic environment of the school) were included. The HLM analysis revealed a strong positive relationship between lifelong learning tendency and organizational happiness ( $\beta=0.39$ ,  $p<0.001$ ). Therefore, it can be put forward that school principals with a high lifelong learning tendency had a high level of organizational happiness. The results also showed that school principals having a graduate degree had a higher organizational happiness level than school principals with undergraduate degree ( $\beta= 0.20$ ,  $p<0.01$ ). The examination of school-related variables indicated that the socioeconomic environment of the school predicted the organizational happiness of the

school principals. It was found that the organizational happiness of school principals was also significantly lower in schools with low socioeconomic environment ( $\beta=0.199$ ,  $p<0.01$ ).

**Table 3**

*School Principal and School level variables predicting organizational happiness level*

| Dependent Variable: Organizational Happiness | Model 2  |           | Model 3  |           |
|--|----------|-----------|----------|-----------|
|  | Beta     | SH        | Beta     | SH        |
| <b>School Principal Level Variables</b>      |          |           |          |           |
| Gender                                       | -0.030   | (0.0505)  | -0.040   | (0.0501)  |
| <i>Education Status</i>                      |          |           |          |           |
| Undergraduate                                | 0.061**  | (0.201)   | 0.059**  | (0.181)   |
| Graduate                                     | 0.199**  | (0.222)   | 0.200**  | (0.222)   |
| Work Experience                              | 0.021    | (0.00290) | 0.008    | (0.00297) |
| Lifelong Learning Tendency                   | 0.390*** | (0.0510)  | 0.399*** | (0.0483)  |
| <b>School Level Variables</b>                |          |           |          |           |
| <i>School Type</i>                           |          |           |          |           |
| Primary School                               |          |           | -0.090   | (0.0625)  |
| Secondary School                             |          |           | -0.088   | (0.0599)  |
| High School                                  |          |           | -0.059   | (0.0591)  |
| <i>Socioeconomic Environment</i>             |          |           |          |           |
| Low  |          |           | 0.199**  | (0.00011) |
| Medium                                       |          |           | 0.244**  | (0.00209) |
| High   |          |           | 0.299**  | (0.00304) |
| <b>Variance Levels</b>                       |          |           |          |           |
| Between Schools                              | 0.0201   | (0.0080)  | 0.0081   | (0.0065)  |
| Within Schools                               | 0.2001   | (0.0140)  | 0.2003   | (0.0151)  |
| N  | 271      |           | 271      |           |

Standardized beta coefficients; \*  $p<0.05$ , \*\*  $p<0.01$ , \*\*\*  $p<0.001$

### Discussion and Conclusions

This study was conducted to examine the individual (gender, education status, work experience and lifelong learning tendency) and school level (school level and socioeconomic environment of the school) factors that playing a role in the organizational happiness of school principals. Thus, Hierarchical Linear Modeling (HLM) method was used to examine the factors affecting the organizational happiness level of school principals. In addition, the effect of school principals' lifelong learning tendencies on organizational happiness levels was investigated in the study. In this section, the prominent findings are discussed and some suggestions for future research on the subject are provided.

First, the baseline model (Model 1) showed 12 % of the variance regarding the school principals' organizational happiness was due to differences between schools and 88% was due to individual differences. This result suggested that a large part of the organizational happiness level of school principals varied as a result of individual characteristics, and the difference between schools was not very effective. This result was not surprising as it is stated in some studies that communicative and extroverted individuals are happier than neurotic individuals. In addition, among the environmental factors regarding the source of happiness, it is known that positive events increase happiness, whereas negative events decrease overall happiness (Lu, 1999; Lu and Argyle, 1991; Lu et al., 1997). Happiness is considered as a subjective, positive and internal psychological state that should be desired as a final life goal in all cultures (Wu, 1992; cited in Lu, 1999). The results of this study revealed that the happiness mostly arouse from subjective situations depending on the factors originating from individuals themselves, while it changed according to the environmental factors consisting of the difference between schools, albeit low. However, more research is needed on this issue. In this sense, future research may examine which individual or environmental factors lead to happiness.

The second result of the study is presented in Model 2 and Model 3. In model 2, school principal-level factors, and in model 3, school-level factors were examined. As a result, it was found that gender, work experience and school type did not have an effect on the organizational happiness of school principals. In addition, it was revealed that school principals having graduate degree were happier than their colleagues with undergraduate degree, and that the happiness levels of principals working in schools located in a low socio-economic environment were lower. As a result, it was found that gender, work experience and school type did not have a significant effect on organizational happiness, whereas education level and socio-economic environment played a significant role in organizational happiness. In the literature, there are conflicting results regarding these factors. For example, even though some studied revealed a significant effect of gender and education on happiness, others reported that happiness did not significantly differ by gender and age (Weech-Maldonado, et al., 2017) (Gerdtham & Johannesson, 2001; Lu et al., 1997; Theodossiou, 1998). Regarding the education variable, it was stated in some studies that happiness increased with education (Gerdtham & Johannesson, 2001), on the contrary, some studies reported that individuals with higher education experienced more distress and were less happy than others (Clark & Oswald, 1994). In addition, there are studies indicating that education was not an effective factor in an individual's life satisfaction (Peterson et al., 2005). These different findings in the literature may be due to the study samples. Therefore, more research is needed to investigate these variables. Similar to the happiness of the individual, demographic variables such as gender, age, education level and marital status did not have an effect

on individual subjective well-being. However, social support was found to have a significant effect on happiness (Lu, 1999). It was revealed in this study that happiness level of school principals working in low socioeconomic regions was lower. Considering that social support has a significant effect on the happiness of the individual, it is thought that the fact that the school principal who cannot find sufficient social support in his/her environment is unhappier is expected due to negative environmental factors.

Finally, the study indicated a positive and strong relationship between lifelong learning tendency and organizational happiness. The results showed that the tendency to lifelong learning affected the happiness of the individual. Similarly, the studies examining the relationship between lifelong learning and happiness of the individual reported that people with more lifelong learning experience were happier than those with less experience. It was also stated that adult lifelong learners were happier than adults who did not tend to learn (Boeren, 2021; Lee, 2016). In addition, the lifelong learning approach was found to be significantly related to the individual's life satisfaction (Reinsch, 2007). The results of the present study confirmed that individuals continuing lifelong learning were happier. In other words, it can be put forward that school principals having lifelong learning tendency and continuing learning are happier than their other colleagues since it is known that as adults continue to learn, they feel happier, reach a higher life satisfaction and have healthier subjective well-being. Obviously, lifelong learning curiosity and desire, which is a long learning journey, is very difficult to maintain. In this respect, another characteristic of an individual with a lifelong learning tendency is perseverance. Thus, it is extremely important to maintain lifelong learning in a stable manner and to consider it as a continuous process (Dunlap & Grabinger, 2003).

It is expected that this study would contribute to the literature on organizational happiness. However, some limitations should be taken into account while evaluating the findings of this study. First, the individual and school-level factors affecting the level of organizational happiness in the hierarchical linear model were limited to the variables preferred by the researchers. Second, the study was limited to the Turkish educational context. Based on the results of the present study, it is recommended that the learning activity, which was found to be highly correlated with happiness, should be maintained by school principals throughout life since it is known that school principals, who are keen on lifelong learning and pursue it, are happier than their colleagues. However, more research is needed in the future to confirm the results of the present study. In addition, it is recommended to examine the individual and within-school factors playing a role in the organizational happiness level of school principals in different educational contexts.

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# Chapter 16

## **NEUROLOGICAL CORRELATES OF EDUCATIONAL ACHIEVEMENT: EVALUATING THE EFFICACY OF FMRI AND EEG IN LEARNING ASSESSMENTS**

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## 1. Introduction

The convergence of neuroscience and education, an interdisciplinary venture that has gained momentum over the last few decades, offers a promising avenue for enhancing educational methodologies and understanding learning processes. Originating in the late 1980s with forums dedicated to neuroscience and education and proliferating in the 1990s with initiatives such as Harvard's Mind, Brain, and Behavior interfaculty program, this fusion has led to the establishment of fields like Mind, Brain, and Education (MBE). These areas, supported by various associations and societies, focus on utilizing neuroscience to decipher patterns in learning and to refine educational practices (Schwartz, 2015).

Recent years have witnessed a significant increase in research on online learning environments, a trend accelerated by the COVID-19 pandemic. This surge in interest, marked by a swift digital transition in education for learners across various levels, underscores the need to explore new methods of educational delivery and efficacy (Bacher-Hicks et al., 2021; Dong et al., 2020). The application of non-invasive neuroimaging techniques, such as functional magnetic resonance imaging (fMRI) and electroencephalogram (EEG), in studying learning environments offers a novel approach to understanding these changes. These techniques, traditionally used to measure neural correlates of behavior and cognition, have mostly been applied to assess learner attention and motivation. However, their potential in evaluating educational effectiveness, particularly in technology-enhanced environments, remains underexplored (Xu & Zhong, 2018; Seghier et al., 2019).

Educational neuroscience, although a relatively nascent field, is expanding rapidly. This systematic review aims to delve into how fMRI and EEG have been utilized in assessing educational effectiveness in both traditional and technology-based learning environments. Moreover, it seeks to explore additional ways these tools can be employed to ascertain educational effectiveness, particularly in online learning contexts, where the interplay between neural processes and learning outcomes is still not fully understood. The review identifies a significant gap in the literature: there is scant research using neuroimaging data directly to determine learning outcomes. It also notes that initial research questions in this domain may have been overly narrow, particularly concerning differences in learning outcomes between online and offline learning environments.

The significance of this systematic review lies in uncovering the potential at the intersection of education and neuroscience. In an era of rapid technological advancement, understanding the neurological underpinnings of learning processes can play a critical role in reshaping educational methods and strategies. Specifically, comprehending how neuroimaging techniques

like fMRI and EEG are used in assessing the effectiveness of learning opens new doors for educators and researchers. This study explores the potential of using neural data to predict learning outcomes, while also addressing the neuroscientific implications of the increasing use of technology in education. With the rise of online learning environments, this research accentuates the importance of neuroimaging in measuring the efficacy of educational technologies. Consequently, this systematic review aids in deepening our understanding of the interaction between education and neuroscience, providing informative data that could influence future educational policies and practices.

The burgeoning interest in online learning, combined with the expanding scope of educational neuroscience, presents an opportunity to explore new dimensions of learning. This review will address two critical questions: 1) How have fMRI and EEG been utilized to assess educational effectiveness in various learning environments? 2) What additional roles can these neuroimaging techniques play in determining educational effectiveness, especially in technology-based settings? By addressing these questions, the review aims to highlight the current state of literature, identify gaps, and suggest directions for future research in this intriguing and vital field.

## **2. Methodology**

### **2.1. Establishing Eligibility Criteria**

In conducting this research, stringent criteria were established to select studies for review. These criteria included: utilization of fMRI or EEG for data collection; participants ranging from any educational level, including K-12, higher education, and adult learners; studies published from 2010 onwards; and research covering learning across various disciplines. An initial screening of potential sources led to the identification of 48 full-text articles, which were then meticulously assessed for their relevance and compliance with these criteria.

### **2.2. Approach to Source Selection**

The research process involved a thorough search using Google Scholar. Given the cross-disciplinary nature of this study, a broader approach was favored, emphasizing the expansive search capabilities of these two resources. The literature considered for review was confined to peer-reviewed journals, with no exclusions based on specific disciplines.

### **2.3. Keyword Strategy**

The initial phase of literature search employed a set of specific keywords: 'fMRI,' 'EEG,' 'online learning,' 'education,' 'learning,' 'effectiveness,' and

‘learning outcomes.’ These terms were strategically chosen to encompass the breadth of the study’s focus areas.

#### **2.4. Process of Study Selection**

The selection of relevant studies involved a multi-stage review process. Each article was initially evaluated based on its abstract and title to ascertain if it aligned with the predetermined eligibility criteria. Articles with insufficient data in the abstract were earmarked for a comprehensive review, involving a detailed reading of the entire paper to determine its relevance. Prior to the final analysis, a re-evaluation of all papers was conducted, ensuring that each study rigorously met the eligibility standards. Out of the 48 initially identified papers, 10 were selected for in-depth analysis. Studies focusing exclusively on attention and motivation during learning tasks were omitted, but no demographic factors (such as age, neurological or psychological history) led to exclusion, as the review was not confined to any specific demographic.

#### **2.5. Data Extraction Methodology**

Data extraction was performed by meticulously cataloging the attributes of each eligible study into a Microsoft Excel spreadsheet. These attributes encompassed a range of aspects, including publication date, authors, research questions, study methodology, data collection and analysis techniques, participant demographics, key findings, and overarching conclusions.

### **3. Results**

#### **3.1. Characteristics of the Studies**

An analysis of the selected literature revealed distinct patterns concerning the current use of fMRI and EEG data in educational research.

#### **3.2. Overview of Study Designs**

Among the 10 studies reviewed, six employed fMRI as their primary tool (citations: Habel et al., 2010; Hampstead et al., 2010; Hansenn et al., 2014; Hofmann et al., 2019; Miró-Padilla, 2019; Chung et al., 2016), while the remaining four utilized EEG (citations: Huang & Lin, 2019; Pi et al., 2021; Rittmo et al., 2020; Van Hecke et al., 2015).

#### **3.3. Data Collection Context and Participant Demographics**

##### **3.3.1. Context of Data Collection**

The reviewed studies predominantly conducted their research in controlled, experimental settings, typically within laboratory environments. Here, tasks or stimuli were administered to participants using technology-

aided platforms, primarily computers, ensuring a standardized setting for data collection (citations: Habel et al., 2010; Hampstead et al., 2010; Hofmann et al., 2019; Huang & Lin, 2019; Miró-Padilla, 2019; Pi et al., 2021; Rittmo et al., 2020). However, a subset of studies opted for more naturalistic data collection methods. This included using pro-social games in both digital and physical formats (Chung et al., 2016), as well as individual educational therapy sessions and group workshops to engage participants in a more authentic learning environment (Hansenn et al., 2014; Van Hecke et al., 2015).

### **3.3.2. Demographics of Participants**

The studies generally focused on adult learners (citations: Habel et al., 2010; Hampstead et al., 2010; Hansenn et al., 2014; Miró-Padilla, 2019; Pi et al., 2021; Rittmo et al., 2020), with some research extending to adolescent (Chung et al., 2016; Van Hecke et al., 2015) and child participants (Hofmann et al., 2019; Huang & Lin, 2019). The diversity in participant demographics was further illustrated in Figure 4, revealing a mix of neurotypical individuals and those with specific neurological or psychological conditions. Four papers focused on neurotypical participants (citations: Hansenn et al., 2014; Hofmann et al., 2019; Miró-Padilla, 2019; Pi et al., 2021); one study did not specify, implying a neurotypical cohort as well (Rittmo et al., 2020). Three studies involved participants with Autism Spectrum Disorder (ASD) (citations: Huang & Lin, 2019; Chung et al., 2016; Van Hecke et al., 2015), with others focusing on individuals with Mild Cognitive Impairment (Hampstead et al., 2010) and Schizophrenia (Habel et al., 2010).

### **3.3.3. Educational Topics and Research Focuses**

The array of studies reviewed addressed various educational topics. A significant number investigated the neural basis of social learning (citations: Rittmo et al., 2020; Chung et al., 2016; Van Hecke et al., 2015) and memory or recall processes (citations: Hampstead et al., 2010; Miró-Padilla, 2019; Pi et al., 2021). Additionally, two studies delved into emotional learning (citations: Habel et al., 2010, Hansenn et al., 2014), while others explored the effects of implicit versus explicit feedback (Hofmann et al., 2019) and the relationship between stress, attention, and learning outcomes (Huang & Lin, 2019).

## **4. Discussion**

### **4.1. Purpose of the Systematic Review**

This systematic literature review aimed to address two pivotal research questions: 1) The application of fMRI and EEG in assessing educational effectiveness in both traditional and technology-based learning settings, and 2) Potential new avenues for utilizing fMRI and EEG in determining

educational effectiveness, particularly in technology-aided learning contexts.

#### **4.2. Current Applications of fMRI and EEG**

The literature indicates that the application of fMRI and EEG in educational settings has been somewhat limited, often attributed to the challenges of integrating these technologies into authentic educational environments (Seghier et al., 2019; Xu & Zhong, 2018). Most reviewed studies were conducted in laboratory settings, pointing to a gap in research conducted in real-world educational contexts. Furthermore, the focus of these studies was predominantly on memory and socio-emotional skills, leaving a research void in areas such as problem-solving and subject-specific skills (e.g., mathematics, writing, science). Notably, only one study compared online and offline learning environments (Chung et al., 2016), indicating a lack of comprehensive research in this area.

#### **4.3. Educational Effectiveness and Neuroimaging Techniques**

Surprisingly, the direct use of fMRI and EEG in measuring learning outcomes was limited in the reviewed literature. These techniques were typically used to correlate neuroimaging data with learning outcomes rather than directly measuring them. For instance, Huang & Lin (2019) assessed learning outcomes in neurotypical children and children with ASD using augmentative and alternative communication devices, but the comprehension of words was measured through pre- and post-tests, with EEG data providing supplementary information on stress and attention levels.

Similarly, Hofmann et al. (2019) explored associative learning in children without explicit feedback, correlating EEG data with learning outcomes. The study's major neurological finding was the similarity of neural indices of prediction error in pre-adolescents to those in adults, although this was not directly linked to learning effectiveness. Chung et al. (2016) also correlated learning outcomes with neuroimaging data, focusing on ASD adolescents' ability to recognize emotions in online and offline cognitive behavioral therapy. In these studies, fMRI and EEG data were used to identify brain arousal and activity locations during learning tasks.

#### **4.4. Potential for Future Research Using Neuroimaging in Education**

Despite the current limitations, there exists a significant potential for research to establish robust links between brain function and learning. Understanding the neurological basis of learning, such as prediction error, can assist in developing instructional techniques to enhance learning. However, due to the variation in brain activity across individuals and demographics, it's crucial to employ neuroimaging as a supplementary, rather than primary,



measure of educational effectiveness. This principle applies to both traditional and technology-based educational environments.

### **Conclusion**

This literature review, while comprehensive in its current scope, encounters certain limitations that merit consideration. The singular approach of having one researcher conduct the entire review process, from determining study eligibility to final analysis, potentially introduces a degree of selection bias. A more diverse research team might have interpreted eligibility criteria differently, possibly leading to a broader range of studies being included. Moreover, the reliance on specific keywords and a single library database for literature search might have inadvertently narrowed the spectrum of available research. Additionally, the review of only 10 papers, while providing depth, may not fully capture the diverse array of perspectives existing in the broader field. Future iterations of similar reviews should contemplate the inclusion of multiple databases and a collaborative team of researchers to enhance the comprehensiveness and diversity of the literature surveyed.

Despite its nascent stage, the field of educational neuroscience presents a significant area of growth, particularly in the context of using neuroimaging techniques to understand and predict learning outcomes. However, the literature reviewed underscores the scarcity of studies that directly link neuroimaging data to learning outcomes. This gap is especially pronounced in research exploring the distinctions between traditional classroom settings and technology-mediated learning environments, a crucial area given the escalating interest in online education.

The findings reveal a compelling opportunity for researchers in both neuroscience and education to delve deeper into how the brain engages with learning tasks. The potential of developing a model that can predict learning outcomes based on neural activity is an exciting prospect. Such advancements could revolutionize our understanding of educational effectiveness and tailor learning experiences more closely to individual neural profiles.

Furthermore, the comparative neurological analysis of online versus offline learning remains a relatively uncharted territory. Given the increasing prevalence of digital learning platforms, it is imperative to understand how these environments influence neural processes and learning outcomes. This area of research holds great promise for not only advancing theoretical knowledge but also for practical applications in educational technology and instructional design.

## 5. Recommendations

For instructional designers and educators, the insights gleaned from neuroscientific research on learning are invaluable. By integrating knowledge about the neural bases of learning, educational professionals can develop more effective instructional strategies that cater to the cognitive and emotional needs of learners. It is crucial for educators to stay abreast of such research findings, as they have the potential to transform pedagogical practices and enhance learning outcomes.

In conclusion, while the intersection of educational neuroscience and neuroimaging is still in its early stages, it holds immense potential for enriching our understanding of learning processes. Continued research in this field is vital, not only for academic enrichment but also for practical implications in shaping future educational landscapes.

### 5.1. For Researchers in Educational Neuroscience

- **Expanding Research Teams and Methods:** Future studies should consider involving multi-disciplinary teams to diversify perspectives and methodologies. This approach could enrich the research by incorporating varied expertise, such as cognitive psychology, education technology, and neurology.
- **Broader Literature Search:** Utilizing multiple databases and incorporating a wider range of keywords could uncover a more comprehensive collection of studies, providing a more holistic view of the field.
- **Investigating Diverse Learning Environments:** Given the rise of online education, it is recommended that future research specifically targets the comparison between traditional and digital learning environments, exploring how different settings impact neural processes and learning outcomes.
- **Longitudinal Studies:** Conducting long-term studies that track the neuroimaging data over time could provide deeper insights into how learning impacts brain development and vice versa.

### 5.2. For Educational Policy Makers

- **Supporting Interdisciplinary Research:** Policies should be devised to encourage and fund interdisciplinary research in educational neuroscience, fostering collaborations that can explore complex educational issues from multiple perspectives.

- **Integrating Neuroscience in Teacher Training:** Incorporate findings from educational neuroscience into teacher education programs to equip educators with a better understanding of how learning processes are reflected in brain activity.

### 5.3. For Instructional Designers and Educators

- **Applying Neuroscientific Insights:** Leverage neuroscientific findings to develop teaching strategies and learning materials that align with how the brain processes and retains information.
- **Personalized Learning Approaches:** Use insights from neuroscience to tailor learning experiences to individual needs, potentially enhancing engagement and effectiveness.

### 5.4. For Technology Developers

- **Developing Neuro-Adaptive Learning Technologies:** Explore the development of learning technologies that adapt in real-time to the learner's neural responses, potentially offering more personalized and effective learning experiences.
- **Investing in Research and Development:** Allocate resources to the research and development of technologies that can seamlessly integrate neuroimaging techniques in educational settings, both for research and practical applications.

By heeding these recommendations, the field of educational neuroscience can move forward more cohesively and effectively, contributing to a richer understanding of the learning process and fostering the development of more effective educational practices and technologies.

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# Chapter 17

## **EXPLORING GENERALIZABILITY THEORY IN R: UNDERSTANDING ONE-FACET AND TWO-FACET FULLY CROSSED DESIGNS WITH PRACTICAL EXAMPLES**

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## 1. INTRODUCTION

Generalizability theory is a theory based on the analysis of variance methods that are used to obtain a single reliability value by evaluating more than one error source together. As stated by Brennan (2001), this theory enables the identification and measurement of inconsistencies that exist or may exist in the observed scores with powerful statistical methods.

In classical test theory, there are multiple methods of obtaining reliability values and each method addresses a different source of error. For example, while the internal consistency coefficient focuses on the source of error that may arise from item sampling, the test-retest reliability method focuses on the error that may arise from the time elapsed between two tests. Since the error variance will vary from measurement to measurement, the calculated reliability coefficient (the ratio of the true score variance to the observed [true + error] score variance) will also vary. Therefore, there are hesitations about which of the reliability methods should be used. For example, a researcher needs to decide whether to calculate the inter-rater consistency or the internal consistency coefficient for each rater's score when a group's answers to a test are scored by different raters. In fact, in cases where one of these coefficients takes low values and the other takes high values, it becomes difficult to make comments according to which one (Kieffer, 1998; Güler, 2009; Güler et al., 2012). On the other hand, with the Generalizability Theory, it is possible to obtain a comprehensive reliability coefficient with a single calculation by taking into account all surfaces and taking into account the effects of error sources separately and with each other (Brennan, 2001).

According to Shavelson and Webb (1991), generalizability theory is an extended version of classical test theory in terms of the following features:

- Examining multiple sources of variance with a single analysis,
- Ensuring that the size of each variance source is determined separately,
- It allows two different reliability coefficients to be calculated for both relative decisions based on the performance of individuals (G coefficient: “how much better” one individual performs than another) and absolute decisions about the performance of individuals (Phi coefficient: “how well” an individual performs regardless of their peers' performance),



- It allows the regulation of measurements (Decision “D” studies) in which the measurement error can be minimized depending on a specific purpose.

For these reasons, the use of generalizability theory has become widespread, and it is recommended to use generalizability theory by institutions that set standards in the field of educational research. For example, in its standards updated in 2014, the American Educational Research Organization (AERA) states that, contrary to traditional approaches about generalizability theory, it encourages the researcher to determine the components of true score, error score and observed score variance in reliability studies, to estimate, and to calculate coefficients based on these estimates (AERA, 2014). In addition, in relation to parallel measurements or repeated reliability estimates, in the standards manual, it is requested to clearly indicate which error sources are examined in the reliability studies by referring to the generalizability theory. In addition, it is stated that generalizability studies and variance component analyze can help in estimating the error variances arising from each error source while determining the error sources (AERA, 2014; AERA, 1999; Aydoğmuş, 2021).

The open-source R program, which has been accepted as a user-friendly software in recent years, is a powerful data analysis platform where data can be processed statistically, detailed analysis is made, the desired graphics related to these analyzes can be obtained and reported, and more and more scientific studies are made every day. Despite its superior features, it is seen that the R program is not used much in generalizability theory studies. Among the most important reasons for this, it is thought that the package to be used for generalizability theory application and the built-in functions in this package are not sufficiently understood by the researchers. In this study, it is aimed to explain clearly how the generalizability theory works in R through examples of one-facet and two-facet fully crossed designs.

### **1.1. Basic Concepts in Generalizability Theory**

Errors involved in measurement results can come from different error sources. Generalizability theory calls the sources of these potential measurement errors (items, raters, time, forms, etc.) as facets, and the levels of surfaces as conditions. Individuals or students, on the other hand, are defined as the object of measurement because they are usually the targets of the measurement from which the desired decisions will be made. Since inter-

individual differences are natural and systematic, variability (variance) depending on individuals is a desirable situation. Therefore, individuals are not considered as surfaces. However, it is not a necessity for the object of measurement to be individuals in all measurement situations. For example, in the scoring of the five-item questions asked to 10 students in a quiz by three different raters, the students constitute the object of measurement, while the questions and the raters constitute the two surfaces. However, in a study in which 20 items in an achievement test were scored by three experts according to their difficulty levels, the items constitute the object of measurement and the raters a single surface (Shavelson & Webb, 1991; Güler et al., 2012).

In generalizability theory, analyzes are carried out by creating two types of designs, depending on the way the object of measurement and surfaces are handled. One of them is the crossed design and is indicated by the "x" sign. In the crossed design, all individuals answer all items, and all raters score all individuals and items. If the five-item questions asked to 10 students in the example above were scored with three different raters, each student answered all five items, and each rater scored all the answers of all students. Here, if students (participant: p) are symbolized by items (i) and raters (r), the resulting pattern becomes p x i x r. The other pattern is the nested pattern and is indicated by the ":" sign. In the nested design, different students (p) are asked different items (i), and different raters (r) score different items answered by different students. The pattern obtained here is shown as p : i : r. Although these two basic designs vary depending on the number of surfaces, there are also designs in which both are used together, these are called mixed designs (Güler et al., 2012; Shavelson and Webb, 1991).

Generalizability theory has two main studies: Generalizability (G) and Decision (D). In the G study, the researcher is interested in generalizing the sample on which he is measuring to the population of the measurement. Investigation of the stability of the answers obtained from a test, the consistency of the scores in two or more forms of a measurement tool, and the relationship between subscales or items (internal consistency) are within the scope of G study. The D study, on the other hand, includes collecting data to make a decision for a specific purpose. To compare different groups in a study, to identify individuals in order to make a correct selection or placement, and to investigate the relationship between two or more variables can be given as examples of D study.

$$X_{pir} = \mu + v_p + v_i + v_r + v_{pi} + v_{pr} + v_{ir} + v_{pir} \quad (1)$$

It is the score given by one of the raters to an item answered by a participant in the  $p \times i \times r$  crossed design created in the G study and is calculated with the equation (1).

In equation (1),  $\mu$  represents the mean of all scores in the universe and each  $v$  represents one of the seven unrelated components. There are also seven different sources of error variance in this study. These sources of error variance are called the G study variance components. These are; participant (p), item (i), rater (r) main effects; participant-item (pi), participant-rater (pr), item-rater (ir) common effects and participant-item-rater effect and other unidentified error sources consisting of (pir, e) effect.

$$\sigma^2(X_{pir}) = \sigma^2(p) + \sigma^2(i) + \sigma^2(r) + \sigma^2(pi) + \sigma^2(pr) + \sigma^2(ir) + \sigma^2(pir, e) \quad (2)$$

In the generalizability theory, two different coefficients are calculated, namely the generalizability (G) coefficient and the reliability (phi) coefficient. The reason for this is that there are two separate error variances in generalizability theory: the relative error variance ( $\sigma^2(\delta)$ ) and the absolute error variance ( $\sigma^2(\Delta)$ ). The G coefficient ( $E\rho^2$ ), formulated by equation (3), is similar to the reliability coefficient in classical test theory and is used in situations where relative decisions will be made. The Phi coefficient ( $\phi$ ), which is formulated by equation (4), is a much more stringent value and is used in situations where relative decisions are made in performance measures (for example, specialty exam, driving license exam, etc.) where values above a certain cut-off point are important (Lee and Frisbie, 1999; Brennan, 2001).

$$E\rho^2 = \frac{\sigma^2(\tau)}{\sigma^2(\tau) + \sigma^2(\delta)} \quad (3)$$

$$\phi = \frac{\sigma^2(\tau)}{\sigma^2(\tau) + \sigma^2(\Delta)} \quad (4)$$

$$\sigma^2(\tau) = \sigma^2(b) \quad (5)$$

The error variance components in the G coefficient are the interaction of the object OF measurement (individuals) with other surfaces and the interaction of the composition of all surfaces. The error variance in the Phi coefficient includes the interaction of the measurement object and the other

surfaces, as well as the changes that occur from the interactions of all surfaces themselves and with each other, such as double, triple, etc. (Shavelson and Webb, 1991, 2005). The variance components and error variances in the G and K studies are given in Table 1.

### 1.2. Generalizability Theory in R Program

R is a powerful data analysis platform where data can be processed statistically, detailed analysis is made, desired graphs related to these analyzes can be obtained and reported. The R program works with all common operating systems and includes thousands of useful special modules and utilities for many different fields of science. It is preferred by many researchers with its open-source code and ability to contribute to the development of users and stands out as a free statistical program where more and more scientific studies are carried out every day.

**Table 1.** Components of Variance and Error Variances of Study G and Study K

| Design                      |   |                             |  |
|-----------------------------|---|-----------------------------|--|
| p x i                       |   | p x i x r                   |  |
| G Study Variance Components | K Study Variance Components and Formulas                                  | G Study Variance Components | K Study Variance Components and Formulas       |
| $\sigma^2(p)$               | $\sigma^2(p) = \sigma^2(p)$   | $\sigma^2(p)$               | $\sigma^2(p) = \sigma^2(p)$                    |
| $\sigma^2(i)$               |   | $\sigma^2(i)$               | $\sigma^2(I) = \sigma^2(i)/n'_i$               |
| $\sigma^2(pi, e)$           | $\sigma^2(I) = \sigma^2(i)/n'_i$<br>$\sigma^2(pI, e) = \sigma^2(pi)/n'_i$ | $\sigma^2(r)$               | $\sigma^2(R) = \sigma^2(r)/n'_r$               |
|                             |   | $\sigma^2(pi)$              | $\sigma^2(pI) = \sigma^2(pi)/n'_i$             |
|                             |   | $\sigma^2(pr)$              | $\sigma^2(pR) = \sigma^2(pr)/n'_r$             |
|                             |   | $\sigma^2(ir)$              | $\sigma^2(IR) = \sigma^2(ir)/n'_i n'_r$        |
|                             |   | $\sigma^2(pir, e)$          | $\sigma^2(pIR, e) = \sigma^2(pir) / n'_i n'_r$ |
| Design                      |   |                             |  |

| p x i                                     |  | p x i x r  |   |
|---|--|--|---|
| Relative Error Variance                   | Absolute Error Variance                                      | Relative Error Variance                                    | Absolute Error Variance   |
| $\sigma^2(\delta)$<br>$= \sigma^2(pI, e)$ | $\sigma^2(\Delta)$<br>$= \sigma^2(I)$<br>$+ \sigma^2(pI, e)$ | $\sigma^2(\delta)$<br>$= \sigma^2(pI)$<br>$+ \sigma^2(pR)$ | $\sigma^2(\Delta) = \sigma^2(I) + \sigma^2(R) + \sigma^2(pI)$<br>$+ \sigma^2(pR)$<br>$+ \sigma^2(IR)$<br>$+ \sigma^2(pIR, e)$ |

**Note.** In the G study, the surfaces are symbolized with a lower-case letter, while in the K study, the surfaces are symbolized with a capital letter because they are examined in different condition numbers (Huebner & Lucht, 2019).  $n'_m$  and  $n'_p$  indicate the number of conditions in which item and rater surfaces were evaluated in study K.

## 2. METHOD

### 2.1. One-facet p x i Crossed Design

The one-facet p x i crossed design is the most suitable for both application and understanding. For this reason, the application of the generalizability theory in the R program will be started with this design.

#### 2.1.1. Fictional Example

In order to better understand the one-facet p x i crossed design, the data was created by us with the fiction that 10 students/persons/participant (p) were asked 3 different questions/items/occassions (i) in a competition and scored in the range of 0-10 points by a single rater and are shown in Table 2.

**Table 2.** p x i Crossed Design Sample Data

| Persons | Items |   |   |
|---------|-------|---|---|
|         | 1     | 2 | 3 |
| 1       | 9     | 7 | 5 |
| 2       | 9     | 8 | 6 |
| 3       | 7     | 5 | 4 |
| 4       | 6     | 5 | 3 |
| 5       | 9     | 7 | 6 |

|    |    |   |   |
|----|----|---|---|
| 6  | 10 | 8 | 7 |
| 7  | 8  | 6 | 4 |
| 8  | 6  | 3 | 2 |
| 9  | 8  | 5 | 4 |
| 10 | 8  | 7 | 6 |

---

First of all, the `gtheory` package to be used in the R application is installed and activated (Moore, 2016). Afterwards, the data is introduced.

```
library(gtheory)
persons <- as.factor(rep(1:10,each=3))
items <- as.factor(rep(1:3, times=10))
scores <- c(9,7,5,9,8,6,7,5,4,6,5,3,9,7,6,10,8,7,8,6,4,6,3,2,8,5,4,8,7,6)
data <- data.frame(persons, items, scores)
data
```

With these commands, the individual and the item are introduced as factors. While defining the persons factor, the "rep" function repeats the value given as input. The "each" argument specifies how many times the value given as this input will be repeated. In the example here, "rep" is defined as the number of persons, and "each" is defined as the number of raters. (each of 10 persons is defined 3 times). While defining the item factor, the number of items is defined for the "rep" command this time, and the number of persons for the "times" command (3 items are defined 10 times). After the commands given above, the data is converted to 30 (10x3=30) lines, suitable for calculation by the R program.

Analyses are started with one-way analysis of variance (ANOVA) to determine the degrees of freedom, sums of squares, and mean squares. The command to be entered for ANOVA is given below.

```
summary(aov(scores~persons+items, data=data))
```

As a result of the analysis, persons and item results are given. In addition, in the section called residuals, the results of the analysis of the interaction between the persons and the substance and the unidentified error sources are given.

|  | Df | Sum Sq | Mean Sq | F value | Pr(>F)       |
|--|----|--------|---------|---------|--------------|
| persons  | 9  | 57.20  | 6.356   | 30.11   | 4.68e-09 *** |
| items  | 2  | 54.87  | 27.433  | 129.95  | 2.01e-11 *** |
| Residuals                                      | 18 | 3.80   | 0.211   |         |              |
| ---  |    |        |         |         |              |
| Signif. codes:                                 |    |        |         |         |              |
| 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1 |    |        |         |         |              |

For the `gstudy` function to be used for the G study, it is necessary to formulate the `p x i` design first. For this, the command given below should be applied.

```
formula <- scores ~ (1|persons) + (1|items)
```

Afterwards, the `gstudy` command and definitions should be given for G work.

```
g <- gstudy(data=data, formula)
```

```
g
```

```
$components
  source  var percent n
1 persons 2.048153  41.1 1
2 items 2.722209  54.6 1
3 Residual 0.211111  4.2 1

attr(,"class")
[1] "gstudy" "list"
```

The analysis gives us residual variance values and percentages originating from the persons, the item, and the interaction of them, as values originating from a person and an item. This is the reason why it is expressed as “1|persons” and “1|items” in the defined formula. The findings obtained as a result of the G study are given in Table 3.

**Table 3.** *p x i Crossed Design G Study Results*

| Facets         | Degree of Freedom | Sums of Squares | Mean Squares | Estimated Variance Components | Percentage of Total Variance |
|----------------|-------------------|-----------------|--------------|-------------------------------|------------------------------|
| Persons (p)    | 9                 | 57.20           | 6.36         | 2.05                          | 41.1                         |
| Items (i)      | 2                 | 54.87           | 27.43        | 2.72                          | 54.6                         |
| Residual (pxi) | 18                | 3.80            | 0.21         | 0.21                          | 4.2                          |

The decision study, on the other hand, gives the variance values and percentages that may occur with the differentiation of the number of persons and items. It also gives values for the variance of the universe ( $\sigma^2(\tau)$ :var.universe), generalizability coefficient ( $E\rho^2$ : generalizability), relative error variance ( $\sigma^2(\delta)$ : var.error.rel), relative standard error of measurement (sem.rel), relative standard estimation error (see.rel), reliability-phi coefficient ( $\Phi$ : dependability), absolute error variance ( $\sigma^2(\Delta)$ :var.error.abs), absolute standard measurement error (sem.abs) and absolute standard estimation error values.

In order for D to work, the necessary definitions must be made using the dstudy function.

```
d <- dstudy(g,colname.objects = "persons", colname.scores = "scores",
data=data)
d
```

```
$components
  source   var percent n
1 persons 2.04815320 67.7 1
2 items 0.90740293 30.0 3
3 Residual 0.07037033 2.3 3

$var.universe
```



[1] 2.048153

\$generalizability

[1] 0.9667833

\$var.error.rel

[1] 0.07037033

\$sem.rel

[1] 0.2652741

\$see.rel

[1] 0.2608311

\$dependability

[1] 0.6768681

\$var.error.abs

[1] 0.9777733

\$sem.abs

[1] 0.9888242

\$see.abs

[1] 0.8135254

attr("class")

[1] "dstudy" "list"

The result of the decision study shows the variance results explained by the data according to one person and three items. If it is desired to determine how the variance ratio explained when the number of items changes, the variance ratios obtained from the G study are obtained by

dividing the number of items to be calculated. For example, if it is desired to determine the variance ratio explained by four items, the value of  $\sigma^2(m) = 2.72$  obtained from the G study is obtained by dividing by four.

In order to calculate the surface variances, relative error variance, absolute error variance, generalizability coefficient and reliability-phi coefficients that occur according to the change in the number of items, the following commands should be used by making use of Table 1 and equations (3).

First, the desired change in the number of items should be defined. Here, the cases of 1, 4, 7 or 10 items were examined.

```
n_i <- c(1, 4, 7, 10)
item_variance <- g$components[2,2]/n_i
personsxitem_variance <- g$components[3,2]/n_i
relative_error_variance <- g$components[3,2]/n_i
absolute_error_variance <- g$components[2,2]/n_i+g$components[3,2]/n_i
g_coefficient <- g$components[1,2]/(g$components[1,2]+
relative_error_variance)
phi_coefficient <- g$components[1,2]/(g$components[1,2]+
absolute_error_variance)
round(item_variance,2)
```

```
[1] 2.72 0.68 0.39 0.27
```

```
round(personsxitem_variance,2)
```

```
[1] 0.21 0.05 0.03 0.02
```

```
round(relative_error_variance,2)
```

```
[1] 0.21 0.05 0.03 0.02
```

```
round(absolute_error_variance,2)
```

```
[1] 2.93 0.73 0.42 0.29
```

```
round(g_coefficient,2)
```

```
[1] 0.91 0.97 0.99 0.99
```

```
round(phi_coefficient,2)
```

```
[1] 0.41 0.74 0.83 0.87
```

Expressions in closed parenthesis in the commands of variances and G and Phi coefficients represent the number of rows and columns in the matrix given as a result of `g$components`. For example, to calculate the G coefficient, the 1st row and 2nd column of the `g$components` matrix are expressed with the `g$components[1,2]` command.

The data obtained as a result of the decision study are tabulated.

**Table 4.** *p x i Crossed Design Decision Study Results*

| $\sigma^2$          | $n_p$              | 3           | 1    | 4    | 7    | 10   |
|---------------------|--------------------|-------------|------|------|------|------|
| $\sigma^2(p)=2.05$  | $\sigma^2(p)$      | <b>2.05</b> | 2.05 | 2.05 | 2.05 | 2.05 |
| $\sigma^2(i)=0.91$  | $\sigma^2(I)$      | <b>0.91</b> | 2.72 | 0.68 | 0.39 | 0.27 |
| $\sigma^2(pi)=0.07$ | $\sigma^2(pI)$     | <b>0.07</b> | 0.21 | 0.05 | 0.03 | 0.02 |
|                     | $\sigma^2(\delta)$ | <b>0.07</b> | 0.21 | 0.05 | 0.03 | 0.02 |
|                     | $\sigma^2(\Delta)$ | <b>0.98</b> | 2.93 | 0.73 | 0.42 | 0.29 |
|                     | $E\rho^2$          | <b>0.97</b> | 0.91 | 0.97 | 0.99 | 0.99 |

As the number of raters of the generalizability coefficient and the reliability-phi coefficient change, the `ggplot2` package is used to interpret the values they receive visually (Wickham, 2016). If we want to examine the change in the number of raters from 1 to 25, it is necessary to first calculate the generalizability and phi coefficient, and then visualize it:

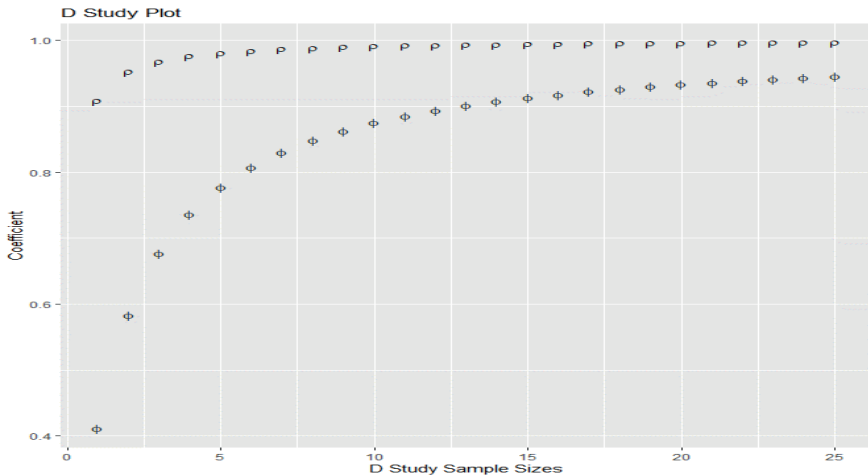
```

n_change <- 1:25
relative_error_variance <- g$components[3,2]/n_change
absolute_error_variance <-
g$components[2,2]/n_change+g$components[3,2]/n_change
g_coefficient <- g$components[1,2]/(g$components[1,2]+
relative_error_variance)
phi_coefficient <- g$components[1,2]/(g$components[1,2]+
absolute_error_variance)

install.packages("ggplot2")
library(ggplot2)
label1 <- "rho"
label2 <- "phi"
ggplot(data.frame(x=n_change, y=g_coefficient, label=label1)) +
geom_text(aes(n_change, g_coefficient, label=label1), parse=TRUE) +
geom_text(aes(n_change, phi_coefficient, label=label2), parse=TRUE) +
ggtitle("D Study Plot") + xlab("D Study Sample Sizes") + ylab("Coefficient")

```

**Figure 1.** *pxi Crossed Design Decision Study Plot*



## 2.2. Two-facet p x i x r Fully Crossed Design

### 2.2.1. Fictional Example

In order to better understand the two-facet p x i x r fully crossed design, the data was created by us with the fiction that 6 students/persons (b) were asked 4 different questions/items/occasions (m) in a competition and were scored in the range of 0-10 points by 2 different raters and shown in Table 5.

**Table 5.** *p x i x r Fully Crossed Design Sample Data*

| Persons | Items  | 1  |   | 2 |   | 3 |   | 4 |   |
|---------|--------|----|---|---|---|---|---|---|---|
|         | Raters | 1  | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1       |        | 9  | 9 | 9 | 8 | 7 | 5 | 4 | 4 |
| 2       |        | 8  | 6 | 9 | 7 | 5 | 4 | 5 | 4 |
| 3       |        | 8  | 6 | 8 | 6 | 6 | 3 | 2 | 2 |
| 4       |        | 7  | 6 | 8 | 5 | 7 | 6 | 4 | 2 |
| 5       |        | 10 | 8 | 8 | 7 | 8 | 5 | 6 | 5 |
| 6       |        | 6  | 3 | 4 | 2 | 5 | 3 | 2 | 1 |

First of all, the gtheory package to be used in the R application is installed and activated (Moore, 2016). Afterwards, the data is introduced.

```
library(gtheory)
persons <- as.factor(rep(1:6,each=8))
raters <- as.factor(rep(1:2, each=4, times=6))
items <- as.factor(rep(1:4, times=12))
scores <-
c(9,9,7,4,9,8,5,4,8,9,5,5,6,7,4,4,8,8,6,2,6,6,3,2,7,8,7,4,6,5,6,2,10,8,8,6,8,7,5,5,6,4,
,5,2,3,2,3,1)
data2 <- data.frame(persons, items, raters, scores)
data2
```

With these commands, the persons and the items are introduced as factors. While defining the persons factor, the number of persons is defined for the “rep” command, and the product of the number of items and the

number of raters is defined for the “each” command. While defining the raters factor, the number of raters is defined for the “rep” command, the number of items for the “each” command, and the number of persons for the “times” command. While defining the items factor, the number of items is defined this time for the “rep” command, and the number of persons multiplied by the number of raters for the “times” command. After the commands given above, the data is converted into a 48-line form ( $6 \times 4 \times 2 = 48$ ) suitable for calculation by the R program.

Analyses are started with one-way analysis of variance (ANOVA) to determine the degrees of freedom, sums of squares, and mean squares. The commands and analysis results that must be entered for ANOVA are given below.

```
summary(aov(scores~persons*items*raters, data=data2))
```

|                      | Df | Sum Sq | Mean Sq |
|----------------------|----|--------|---------|
| persons              | 5  | 78.67  | 15.73   |
| items                | 3  | 103.17 | 34.39   |
| raters               | 1  | 30.08  | 30.08   |
| persons:items        | 15 | 24.83  | 1.66    |
| persons:raters       | 5  | 1.92   | 0.38    |
| items:raters         | 3  | 2.42   | 0.81    |
| persons:items:raters | 15 | 5.58   | 0.37    |

As a result of the analysis, results consisting of persons, item, rater results and their interaction with each other are given.

For the `gstudy` command to be used for G work, first of all, it is necessary to formulate the  $p \times i \times r$  design. For this, the command given below should be applied.

```
formula <- scores ~ (1|persons) + (1|items) + (1|raters) + (1|persons:items) + (1|persons:raters) + (1|raters:items)
```

Afterwards, the `gstudy` command and definitions should be given for G work.

```
g <- gstudy(data=data2, formula)
```

```
g
```

| \$components     |             |        |
|------------------|-------------|--------|
| source           | var percent | n      |
| 1 persons:items  | 0.641672328 | 9.5 1  |
| 2 persons:raters | 0.002776883 | 0.0 1  |
| 3 raters:items   | 0.072246581 | 1.1 1  |
| 4 persons        | 1.758386583 | 26.0 1 |
| 5 items          | 2.691228570 | 39.8 1 |
| 6 raters         | 1.219490065 | 18.0 1 |
| 7 Residual       | 0.372217203 | 5.5 1  |

attr(,"class")  
[1] "gstudy" "list"

The analysis gives us the results of the main effects originating from the persons, the item and the rater and the joint effects resulting from their interaction. The data obtained as a result of the G study are shown in Table 6.

**Table 6.** *b x m x p Fully Crossed Design G Study Results*

| Facets     | Degree<br>of<br>Freedom | Sums<br>of<br>Squares | Mean<br>Squares | Estimated<br>Variance<br>Components | Percentage<br>of Total<br>Variance |
|------------|-------------------------|-----------------------|-----------------|-------------------------------------|------------------------------------|
| Persons(p) | 5                       | 78.67                 | 15.73           | 1.76                                | 26.0                               |
| Items (i)  | 3                       | 103.17                | 34.39           | 2.69                                | 39.8                               |
| Raters (r) | 1                       | 30.08                 | 30.08           | 1.22                                | 18.0                               |
| pi         | 15                      | 24.83                 | 1.66            | 0.64                                | 9.5                                |
| pr         | 5                       | 1.92                  | 0.38            | 0.00                                | 0.0                                |
| ir         | 3                       | 2.42                  | 0.81            | 0.07                                | 1.1                                |
| pir,e      | 15                      | 5.58                  | 0.37            | 0.37                                | 5.5                                |

In order for D to work, the necessary definitions must be made using the dstudy function.

```
d <- dstudy(g, colname.objects="persons", colname.scores="scores",
data=data2)
d
```

The result of study D shows the variance results explained by the data according to one person, four items and two raters. If it is desired to determine how the variance rate explained when the number of items changes, the variance rates obtained from the G study are obtained by dividing the number of items or raters to be calculated. In addition, the following commands should be used to calculate the relative error variance, absolute error variance, generalizability coefficient and reliability-phi coefficients that occur according to the change in the number of items or raters.

| \$components       |                |             |        |
|--------------------|----------------|-------------|--------|
|                    | source         | var percent | n      |
| 1                  | persons:items  | 0.160418082 | 4.9 4  |
| 2                  | persons:raters | 0.001388441 | 0.0 2  |
| 3                  | raters:items   | 0.009030823 | 0.3 8  |
| 4                  | persons        | 1.758386583 | 54.0 1 |
| 5                  | items          | 0.672807142 | 20.6 4 |
| 6                  | raters         | 0.609745032 | 18.7 2 |
| 7                  | Residual 0     | .046527150  | 1.4 8  |
| \$var.universe     |                |             |        |
|                    | [1]            | 1.758387    |        |
| \$generalizability |                |             |        |
|                    | [1]            | 0.8940705   |        |
| \$var.error.rel    |                |             |        |
|                    | [1]            | 0.2083337   |        |
| \$sem.rel          |                |             |        |
|                    | [1]            | 0.4564358   |        |
| \$see.rel          |                |             |        |
|                    | [1]            | 0.4315843s  |        |
| \$dependability    |                |             |        |
|                    | [1]            | 0.5396633   |        |



```

$var.error.abs
[1] 1.499917

$sem.abs
[1] 1.224711

$see.abs
[1] 0.8996944

attr(,"class")
[1] "dstudy" "list"

```

First of all, we must define how we want the number of items or raters to change.

```

n_i <- c(1,2,3,4,5)
n_r <- c(1,2,3,3,3)
items_variance <- g$components[5,2]/n_i
round(items_variance,2)

```

```
[1] 2.69 1.35 0.90 0.67 0.54
```

```

raters_variance <- g$components[6,2]/n_r
round(raters_variance,2)

```

```
[1] 1.22 0.61 0.41 0.41 0.41
```

```

personsxitems_variance <- g$components[1,2]/n_i
round(personsxitems_variance,2)

```

```
[1] 0.64 0.32 0.21 0.16 0.13
```

```

personsxraters_variance <- g$components[2,2]/n_r
round(personsxraters_variance,2)

```

```
[1] 0 0 0 0 0
```

```
itemsxraters_variance <- g$components[3,2]/(n_r*n_i)
round(itemsxraters_variance,2)
```

```
[1] 0.07 0.02 0.01 0.01 0.00
```

```
personsxitemsxraters_variance <- g$components[7,2]/(n_r*n_i)
round(personsxitemsxraters_variance,2)
```

```
[1] 0.37 0.09 0.04 0.03 0.02
```

```
rel_err_var <- g$components[1,2]/n_i + g$components[2,2]/n_r +
g$components[7,2]/(n_i*n_r)
g_coef <- g$components[4,2]/(g$components[4,2]+rel_err_var)
round(rel_err_var,2)
```

```
[1] 1.02 0.42 0.26 0.19 0.15
```

```
round(g_coef,2)
```

```
[1] 0.63 0.81 0.87 0.90 0.92
```

```
abs_err_var <- g$components[1,2]/n_i + g$components[2,2]/n_r +
g$components[7,2]/(n_i*n_r) + g$components[3,2]/(n_i*n_r) +
g$components[5,2]/n_i + g$components[6,2]/n_r
phi_coef = g$components[4,2]/(g$components[4,2]+abs_err_var)
round(abs_err_var,2)
```

```
[1] 5.00 2.39 1.57 1.28 1.10
```

```
round(phi_coef,2)
```

```
[1] 0.26 0.42 0.53 0.58 0.61
```

The data obtained as a result of the D study are tabulated (Table 7).

The ggplot2 package is used to visually interpret the values of the generalizability coefficient and the reliability-phi coefficient as the number of items or raters change. If we want to examine the change in the number of

items and raters from 1 to 25 (1-1, 2-2, 3-3, ...), it is necessary to first calculate the generalizability and phi coefficient and then visualize it (Figure 2).

**Table 7.** p x i x r Fully Crossed Design D Study Results

| $\sigma^2$             | $n_i$              | <b>4</b>    | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> |
|------------------------|--------------------|-------------|----------|----------|----------|----------|----------|
|                        | $n_r$              | <b>2</b>    | <b>1</b> | <b>2</b> | <b>3</b> | <b>3</b> | <b>3</b> |
| $\sigma^2(p)=1.76$     | $\sigma^2(p)$      | <b>1.76</b> | 1.76     | 1.76     | 1.76     | 1.76     | 1.76     |
| $\sigma^2(i)=0.67$     | $\sigma^2(I)$      | <b>0.67</b> | 2.69     | 1.35     | 0.90     | 0.67     | 0.54     |
| $\sigma^2(r)=0.61$     | $\sigma^2(R)$      | <b>0.61</b> | 1.22     | 0.61     | 0.41     | 0.41     | 0.41     |
| $\sigma^2(pi)=0.16$    | $\sigma^2(pI)$     | <b>0.16</b> | 0.64     | 0.32     | 0.21     | 0.16     | 0.13     |
| $\sigma^2(pr)=0.00$    | $\sigma^2(pR)$     | <b>0.00</b> | 0.00     | 0.00     | 0.00     | 0.00     | 0.00     |
| $\sigma^2(ir)=0.01$    | $\sigma^2(IR)$     | <b>0.01</b> | 0.07     | 0.02     | 0.01     | 0.01     | 0.00     |
| $\sigma^2(pir,e)=0.05$ | $\sigma^2(pIR)$    | <b>0.06</b> | 0.37     | 0.09     | 0.04     | 0.03     | 0.02     |
|                        | $\sigma^2(\delta)$ | <b>0.21</b> | 1.02     | 0.42     | 0.26     | 0.19     | 0.15     |
|                        | $\sigma^2(\Delta)$ | <b>1.50</b> | 5.00     | 2.39     | 1.57     | 1.28     | 1.10     |
|                        | $E\rho^2$          | <b>0.89</b> | 0.63     | 0.81     | 0.87     | 0.90     | 0.92     |
|                        | $\Phi$             | <b>0.53</b> | 0.26     | 0.42     | 0.53     | 0.58     | 0.61     |

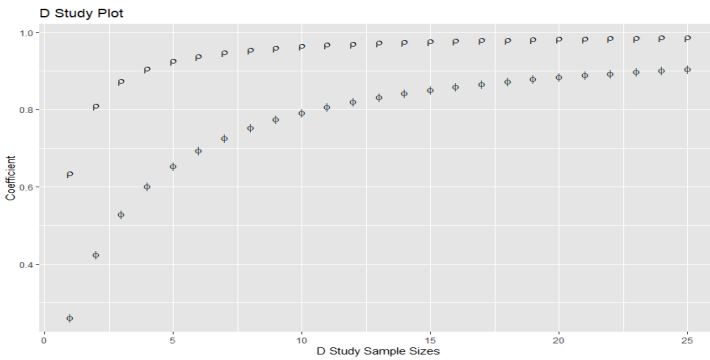
```

n_i_change <- 1:25
n_r_change <- 1:25
rel_err_var <- g$components[1,2]/n_i_change +
g$components[2,2]/n_r_change +
g$components[7,2]/(n_i_change*n_r_change)
abs_err_var <- g$components[1,2]/n_i_change +
g$components[2,2]/n_r_change +
g$components[7,2]/(n_i_change*n_r_change) +
g$components[3,2]/(n_i_change*n_r_change) +
g$components[5,2]/n_i_change + g$components[6,2]/n_r_change
g_coef <- g$components[4,2]/(g$components[4,2]+rel_err_var)
phi_coef <- g$components[4,2]/(g$components[4,2]+abs_err_var)

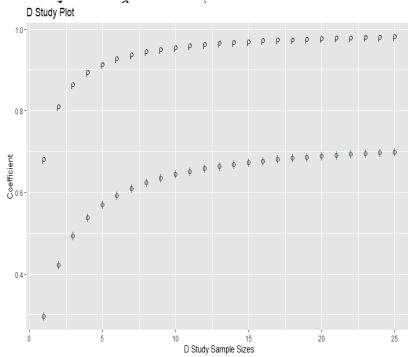
```

```
library(ggplot2)
label1 <- "rho"
label2 <- "phi"
ggplot(data.frame(x=n_i_change, y=g_coef, label=label1)) +
geom_text(aes(n_i_change, g_coef, label=label1), parse=TRUE) +
geom_text(aes(n_i_change, phi_coef, label=label2), parse=TRUE) +
ggtitle("D Study Plot") + xlab("D Study Sample Sizes") + ylab("Coefficient")
```

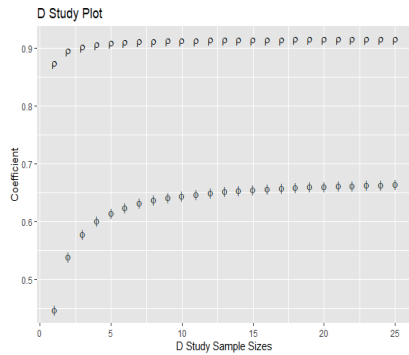
**Figure 2.** *p x i x r Fully Crossed Design D Study*



**Figure 3.** *p x i x r Fully Crossed Design D Study Plot (fixed)*



**Figure 4.** *p x i x r Fully Crossed Design D Study Plot (fixed)*



The researcher can try any scenario to see the change in the G coefficient and the Phi coefficient in the D study. For this, it is sufficient to define the desired item and rater changes, and to calculate error variances and

coefficients using Table 1. Two more D-study graphs have been added as an example, the first is the case where the number of raters is kept constant ( $r=2$ ) and the number of items varies from 1 to 25 (Figure 3), and the other is where the number of items is kept constant ( $i=4$ ) and the number of raters changed from 1 to 25 (Figure 4). The commands of these two examples are given in the appendix.

### **3. DISCUSSION and CONCLUSION**

In this study, Generalizability Theory and its application were tried to be explained in basic terms. The application process, including data definition, analysis and tabulation, was tried to be explained in detail by using the R program, on two samples with one-facet and two-facet fully crossed designs.

Generalizability Theory differs significantly from Classical Test Theory, which examines a single source of error by considering all potential error sources together. This situation is clearly expressed through two fictional examples created by considering possible situations that may be encountered in real life problems. In the one-facet crossed design sample, information about the variances and errors originating from the persons, the item, and the unidentified errors and persons-item interaction were obtained. In the two-facet crossed design example, information was obtained about the main effects of the persons, item and rater, errors caused by their common effects, and their variances.

It is observed that the use of R software has become widespread in research all over the world, as well as in research in our country. In addition, there are no studies on generalizability theory using R software in Turkey. Therefore, it is thought that with this article, researchers will provide an adequate understanding of the package to be used for the application of generalizability theory and the built-in functions in this package, it will be a guide for researchers and contribute to the research of generalizability theory.

The limitation of the study is that the study is carried out on fictional data rather than on real data. For future studies, it is thought that the studies to be carried out on the R software for crossed designs with more than two surfaces, nested designs, mixed designs and various pattern situations where

the surfaces are kept constant will make significant contributions to the literature.

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## 5. APPENDIX

### 5.1. Calculation of G and Phi Coefficients with Fixed Number of Rates, Changing Number of Items and Graphic Drawing Commands

```
n_i_change = 1:25
n_r_change = 2
rel_err_var = g$components[1,2]/n_i_change +
g$components[2,2]/n_r_change +
g$components[7,2]/(n_i_change*n_r_change)
abs_err_var = g$components[1,2]/n_i_change +
g$components[2,2]/n_r_change +
g$components[7,2]/(n_i_change*n_r_change) +
g$components[3,2]/(n_i_change*n_r_change) +
g$components[5,2]/n_i_change + g$components[6,2]/n_r_change
g_coef = g$components[4,2]/(g$components[4,2]+rel_err_var)
phi_coef = g$components[4,2]/(g$components[4,2]+abs_err_var)

library(ggplot2)
label1 = "rho"
label2 = "phi"
ggplot(data.frame(x=n_i_change, y=g_coef, label=label1)) +
geom_text(aes(n_i_change, g_coef, label=label1), parse=TRUE) +
geom_text(aes(n_i_change, phi_coef, label=label2), parse=TRUE) +
ggtitle("D Study Plot") + xlab("D Study Sample Sizes") + ylab("Coefficient")
```

### 5.2. Calculation of G and Phi Coefficients with Fixed Number of Items, Changing Number of Raters and Graphic Drawing Commands

```
n_i_change = 4
n_r_change = 1:25
rel_err_var = g$components[1,2]/n_i_change +
g$components[2,2]/n_r_change +
```



```
g$components[7,2]/(n_i_change*n_r_change)
abs_err_var = g$components[1,2]/n_i_change +
g$components[2,2]/n_r_change +
g$components[7,2]/(n_i_change*n_r_change) +
g$components[3,2]/(n_i_change*n_r_change) +
g$components[5,2]/n_i_change + g$components[6,2]/n_r_change
g_coef = g$components[4,2]/(g$components[4,2]+rel_err_var)
phi_coef = g$components[4,2]/(g$components[4,2]+abs_err_var)

library(ggplot2)
label1 = "rho"
label2 = "phi"
ggplot(data.frame(x=n_r_change, y=g_coef, label=label1)) +
geom_text(aes(n_r_change, g_coef, label=label1), parse=TRUE) +
geom_text(aes(n_r_change, phi_coef, label=label2), parse=TRUE) +
ggtitle("D Study Plot") + xlab("D Study Sample Sizes") + ylab("Coefficient")
```





# Chapter 18

## **THE RELATIONSHIP BETWEEN READINESS FOR CHANGE AND PROFESSIONAL SELF-EFFICACY BELIEFS IN THE TEACHING PROFESSION\***

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\* This study is derived from Seher Demirhan's Master's thesis entitled "Sinif Öğretmenlerinin Öğretmen Öz-Yeterlik İnançları İle Değişime Hazir Olma Durumları Arasındaki İlişki" (The Relationship Between Classroom Teachers' Teacher Self-Efficacy Beliefs and Their Readiness for Change), prepared under the supervision of Assoc. Prof. Dr. Duygu Saniye Öztürk.

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### **What is self-efficacy belief?**

Self-efficacy is one of the most important concepts of the Social Learning Theory developed by Bandura, which argues that individuals must first trust themselves in order to use their skills appropriately (Pajares, 2002). In the Social Learning Theory, Bandura examined the concept of self-efficacy, which is our sense of self-esteem and self-worth, which describes the sense of competence and skill felt while struggling with life. Self-efficacy is one of the important concepts that Bandura thinks is effective in the realization of behaviors (Algan, 2006). According to Bandura (1986), self-efficacy is a situation that is effective in the formation of behaviors, and it is the judgments of the individual about the capacity to plan, organize and perform the actions necessary to achieve the performance determined by the individual.

When the Turkish literature was examined, it was seen that there was no consensus on the use of the Turkish equivalent of the concept of “self-efficacy” and it was determined that it was expressed in different ways such as self-efficacy perception, self-efficacy belief or self-efficacy judgment (Büyükduman, 2006; Uzel, 2009; Oğuz, 2009; Benzer, 2011; Derman, 2007; Senemoğlu, 2007; Ilgaz et al. 2013). In this study, the concept was expressed as “self-efficacy belief”, which is the most common usage. Bandura (1997) emphasizes that self-efficacy is an individual’s belief in performing a performance, regardless of whether he/she is able to perform that performance or not. He sees self-efficacy as a determinant of individuals’ behaviors, thoughts, feelings and motivation and thinks that it also affects individuals’ choices and decisions. If individuals see themselves as sufficient to achieve the performance they want, they are more likely to intend to perform the action they have determined (Bandura, 1994). Gibson and Dembo (1984) state that self-efficacy is related to action-outcome situations, or the belief that an individual can successfully perform the required behavior in relation to the prediction that a particular behavior will lead to certain outcomes. Outcome and self-efficacy expectations are differentiated because individuals may believe that certain behaviors will lead to certain outcomes, but if they do not believe that they can perform the necessary actions, they may not initiate or continue with the relevant behaviors. Senemoğlu (2007) defines self-efficacy as “an individual’s self-perception, belief and judgment about his/her ability and capacity to cope with different situations and to accomplish a certain activity”. Based on the definitions and explanations, it can be said that individuals’ judgments about their own capacities can affect their action plans. When individuals think that the action they plan can result in success, they can achieve positive results by directing their behaviors accordingly, while if they do not think that they can achieve success, they may weaken their actions and achieve results that are not positive enough. Therefore, individuals’ beliefs about

their capacity to achieve something also shape their behaviors. Therefore, in the next section, the effect of individuals' self-efficacy belief levels on their behaviors is examined.

### **The effect of self-efficacy belief levels on individual's behaviors**

Self-efficacy affects individuals' setting goals for themselves, how much effort they will make to achieve these goals, how much they can cope with the difficulties they encounter on the way to achieving their goals, and their attitudes towards this failure if they experience failure (Akkoyunlu et al., 2005). Kurt (2012) states that an individual's perseverance and determination will increase with an increase in self-efficacy belief; accordingly, the individual will perform at a higher level. Similar to this view, Bandura (1997) states that when the self-efficacy levels of two individuals with the same knowledge and skills differ significantly, individuals will behave completely differently for the same action. According to him, an individual with high self-efficacy will believe that he/she can successfully complete the task and keep his/her motivation high, whereas an individual with low self-efficacy will set himself/herself incomplete goals, decrease his/her motivation and fail to perform at the level of his/her capacity. In addition, although the individual has the ability to perform a certain performance, if the self-efficacy belief is low, there is a possibility of failure or giving up the performance (Bandura, 1997).

A strong self-efficacy belief improves an individual's success and well-being in many ways, and individuals with strong self-efficacy beliefs about their abilities approach difficult tasks as challenges to be mastered rather than as threats to be avoided. Individuals with an effective self-efficacy belief set themselves unattainable goals and stick to them. While they increase their efforts in the face of a possible failure, they believe that they can control themselves in threatening situations. Thus, individuals with strong self-efficacy beliefs achieve success and reduce stress and depression (Bandura & Wessels, 1994). On the contrary, individuals who cannot fully trust their abilities choose to stay away from difficult tasks that they see as a threat to themselves. When faced with difficult tasks, they give up in the face of difficulties by focusing on their individual deficiencies instead of focusing on success. Since they see inadequate performance as a lack of ability, their self-efficacy beliefs gradually weaken (Bandura & Wessels, 1994).

In addition to the effects of self-efficacy beliefs on behaviors, their effects on thoughts and emotional responses have also been the subject of research. Pajares (1996) stated that self-efficacy beliefs affect individuals' thought patterns and emotional reactions. According to him, individuals with low self-efficacy may believe that things are more difficult than they really are, experience stress, and have a narrow perspective to solve a problem. On the other hand, individuals with high self-efficacy beliefs may feel at peace when

approaching difficult performances. As a result of these effects, self-efficacy beliefs are determinants of the level of success individuals achieve in their performances. For example, a strong sense of confidence may serve a student well when writing an essay, it may not make him/her a better writer, but because he/she is more interested and attentive to writing, he/she makes a stronger effort and perseveres more. Because of his/her confidence, he/she worries less. Increased self-efficacy beliefs lead to higher levels of performance by increasing perseverance and determination (Pajares, 1996).

The higher the self-efficacy belief, the more effort, persistence and resilience a person has. At the same time, self-efficacy beliefs affect the way individuals think, their problem-solving skills and their emotional reactions. Individuals with low self-efficacy beliefs think that things are harder than they seem, they look at everything from a narrow point of view and they cannot solve the problems they face. However, individuals with high self-efficacy beliefs become more confident and strong in difficult tasks and events with a sense of comfort (Kaptan & Korkmaz, 2002). Individuals show resistance and effort in proportion to their self-efficacy. In addition, self-efficacy beliefs are determinant on individuals' thinking styles, problem solving skills and emotional reactions.

Individuals with low self-efficacy think that things are harder than they seem, narrow their perspective and cannot solve the problems they face, while individuals with high self-efficacy become stronger and more confident in challenging performances (Özenoğlu Kiremit, 2006).

Self-efficacy belief is related to the individual's belief about his/her level of efficacy rather than the actual level of efficacy (Kurbanoglu, 2004). According to Bandura (1995), individuals have low or high beliefs about their level of competence. Beliefs can strongly affect the level of success that individuals will realize. Self-efficacy is also a critical determinant of the life choices individuals make and the courses of action they follow (Pajares, 2006). Self-efficacy belief can affect the individual in a positive or negative way. What determines this effect is the individual's belief in his/her capacity to perform actions. An individual's self-efficacy belief determines his/her resilience against obstacles and the effort he/she will spend to overcome these obstacles. The individual makes effort in proportion to his/her belief in himself/herself (Bandura, 1989). Individuals with high self-efficacy beliefs can produce the best solution in possible problem situations and visualize success scenarios in their minds. Likewise, self-efficacy belief can enable individuals to prefer the most reasonable choice in the choices they face, to strive and persist in the face of difficulties, and to engage in productive behaviors instead of emotional behaviors or bad scenarios (Bandura, 1986).

**Table 2.1.** *Effects of low and high self-efficacy beliefs according to Bandura (1986) (Polat, 2007)*

|                              | <i>High Self-efficacy</i>   | <i>Low Self-efficacy</i>  |
|------------------------------|---|---|
|                              | Effort is increased in the face of difficulties.  | 1. Efforts are reduced.   |
| <i>Task-related behavior</i> | Already acquired skills are intensified and strengthened in the face of challenges.                   | In the face of difficulties, the task can be abandoned altogether.                                |
|                              | Effort and attention are focused on the demands of the situation.                                     | Attention is focused on personal shortcomings and difficulties and problems are magnified.        |
| <i>Long-term effects</i>     | It helps personal development by increasing participation in a variety of activities and experiences. | It inhibits development by facilitating avoidance of developmental environments and activities.   |
|                              | Individuals experience less stress in difficult situations.   | The individual experiences anxiety and stress in various performance situations.                  |
|                              | It is often thought that the reason for failure is not lack of talent, but insufficient effort.       | By directing attention to personal inadequacies, it undermines the effective use of one's skills. |
|                              | It enables setting challenging goals based on interest and participation                              | It leads to setting low goals as a stress avoidance mechanism.                                    |

Table 2.1. summarizes the task-related and long-term effects of high and low self-efficacy beliefs. As seen in the table, individuals with low self-efficacy focus on the characteristics they find themselves lacking and set small goals for themselves (Polat, 2017). However, individuals with high self-efficacy beliefs may set simpler goals for themselves by seeing difficult tasks as challenges to be overcome. Self-efficacy beliefs are determinants of the choices individuals make and the courses of action they follow. Individuals take actions in which they feel competent and secure and avoid actions that they think will result in failure (Pajares, 1996). According to Bıkmaz (2004), individuals use their own judgments when they reach the stage of realizing the goals they want to achieve. For example, if a student believes that he/she can be academically successful, he/she expects to get high scores in his/her exams. However, if he/

she does not believe that he/she can be successful, he/she thinks that he/she will get low scores even before taking the exam.

Schwarzer and Fuchs (1995) state that self-efficacy determines how an individual thinks and behaves. Individuals with low self-efficacy are associated with depression and anxiety as well as low self-esteem and pessimistic thoughts. Strong self-efficacy, on the other hand, increases academic performance in individuals. The level of self-efficacy can increase or inhibit the desire to perform. Individuals with high self-efficacy have high goals and work with determination. In this way, they can choose risky and complex tasks (Yiğitbaş & Yetkin, 2003).

Self-efficacy relates to action-outcome states, or the belief that an individual can successfully perform the required behavior in relation to the prediction that a given behavior will lead to certain outcomes. Expectations of outcome and self-efficacy are differentiated because individuals may believe that certain behaviors will lead to certain outcomes, but if they do not believe that they can perform the required actions, they may not initiate or, if they do, continue with the relevant behaviors (Gibson & Dembo, 1984). If an individual is confident that he/she will perform successfully, he/she will try harder and live the rest of his/her life according to his/her plans. The individual who is confident that he/she can succeed controls the environmental conditions, and the comfort of this is reflected in his/her behavior (Yiğitbaş & Yetkin, 2003). Different studies have tried to explain that self-efficacy beliefs are effective on individuals' behaviors. To summarize all these, the characteristics of individuals with low and high self-efficacy are shown in the table below.

**Table 2.2.** *Characteristics of individuals with low and high self-efficacy (Akar, 2008).*

| Characteristics of Individuals with High Self-Efficacy | Characteristics of Individuals with Low Self-Efficacy |
|--|---|
| *Facing adversity                                      | *Inability to cope with problems                      |
| *To be able to solve problems                          | *Pessimism and hopelessness                           |
| *Believing you can do it                               | *Lack of self-confidence                              |
| *Being academically successful                         | *Giving up an event with a negative outcome           |
| *Being professionally successful                       | *Believing that effort cannot change the outcome      |
| *Showing patience in the performance process           | *Lack of patience                                     |

As seen in Table 2.2, individuals with high self-efficacy have the characteristics of facing difficulties, solving problems, believing that they can succeed, being successful academically, being successful professionally and showing patience in the performance process. On the other hand, individuals

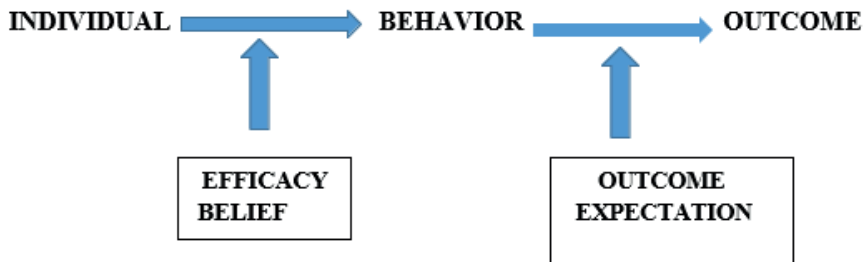


with low self-efficacy have the characteristics of not being able to cope with problems, pessimism and hopelessness, lack of self-confidence, giving up after a negative outcome, believing that effort cannot change the outcome, and lack of patience.

Schunk (1991) believes that the closeness, specificity or difficulty of goals can be determinant in self-efficacy. Close goals increase self-efficacy and motivation more than distant goals. Achieving easier goals may increase self-efficacy and motivation in the early stages of skill acquisition, but more difficult goals may be chosen as the skill develops. Self-efficacy belief is an important determinant of behavior. If an individual considers himself/herself sufficient to succeed in a performance, he/she is more willing to perform (Schunk, 1991).

### Dimensions of self-efficacy beliefs

Self-efficacy belief, which is a psychological construct, consists of three dimensions. The first dimension of self-efficacy belief is the level of belief in the individual's capacity to perform; the second dimension is the ability of the individual to generalize his/her efficacy belief, which varies at different levels, to other behaviors and situations; and the third dimension is robustness, which refers to the stability of individuals in their beliefs about their ability to exhibit behavior in the face of a problem (Maddux, 1995; cited in İnandı et al. 2013).



**Figure 2.1.** *The relationship between efficacy beliefs and outcome expectancy according to Bandura (Derman, 2007)*

As seen in Figure 2.1, Bandura (1977) states that individuals have two expectations in performing any performance and obtaining the desired result. These expectations are self-efficacy belief and outcome expectancy. Self-efficacy belief is an individual's belief in his/her performance in order to achieve a success. On the other hand, outcome expectancy is the individual's ability to predict the possible outcomes of a performance. What is important here is the

individual's judgment about whether he/she can perform successfully or not. Because it is these judgments that will shape the individual's behavior.

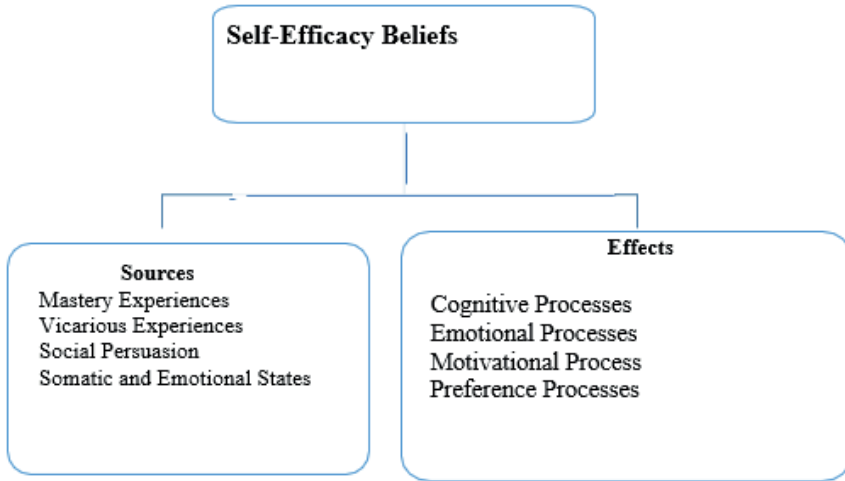
Outcome and self-efficacy expectations are differentiated. This is because individuals may believe that certain behaviors will lead to certain outcomes, but if they do not believe that they can perform the required performances, they cannot initiate or continue the relevant behaviors (Gibson & Dembo, 1984). To summarize, individuals with high self-efficacy beliefs will show higher performance with the confidence they have in themselves, and their outcome expectations will be in this direction. Outcome and self-efficacy expectations are differentiated because individuals may believe that certain behaviors will lead to certain outcomes, but if they do not believe that they can perform the required performances, they may not initiate or continue with the relevant behaviors.

Self-efficacy, which is a psychological construct, is all of the positive thoughts and sense of success, self-esteem and feelings of self-worth in the struggle for life. According to him, the individual's approach in the following three dimensions is decisive in the development of self-efficacy (Korkmaz, 2002; as cited in Algan, 2006):

1. Competence Expectancy: It is the individual's judgment about the result to be obtained by classifying from simple to complex before a performance.
2. Generalization: The ability of the individual to transfer the behavior learned in the past to similar performances.
3. Empowerment: Past performances foreshadow the level of success of future performances. Some performances are further strengthened by transferring them to comprehensive situations.

### **Sources and Effects of Self-Efficacy Beliefs**

The factors affecting the formation of individuals' self-efficacy beliefs (sources of self-efficacy beliefs) and the effects of self-efficacy beliefs on performance are shown schematically below.



**Figure 2.2.** Sources and effects of self efficacy beliefs (Kuzgun & Deryakulu, 2006)

According to Bandura (1997), there are four basic sources of self-efficacy belief. These sources are as follows:

1. Mastery experiences
2. Vicarious experiences
3. Social persuasion
4. Somatic and emotional states

### **Mastery Experiences**

The most important factor in the sources of self-efficacy belief is the individual's experiences (Bandura, 1997). Individuals perform various performances. As a result, they make a judgment. The success or failure of individuals' performances shape their self-belief in their future actions. While a success in the past develops positive self-efficacy beliefs about future actions, a failure in the opposite direction significantly damages self-efficacy beliefs (Zararsız, 2012). Successes from past performances increase expectations, but repeated failures in the past, especially setbacks at the beginning of events, lower expectations. Once strong self-efficacy expectations are developed through repeated successes, the negative impact of occasional failures on the individual is likely to decrease (Bandura, 1977). Individuals obtain information about their self-efficacy from their performances, models they observe, social persuasion methods and psychological sources. However, while the success obtained from experiences strengthens the self-efficacy

belief, a failure experienced decreases self-efficacy (Schunk, 2009).

There is a relationship between an individual's experiences and the development of self-efficacy beliefs. Research on this subject reveals that experiences are a factor affecting self-efficacy. It has been determined that self-efficacy belief develops with increasing experience and skills over time (Bandura, 1986). Accordingly, individuals organize their actions by reviewing their past achievements before performing a performance.

### **Vicarious Experiences**

The second way to strengthen self-efficacy beliefs is through the reliable experiences provided by social models. When people succeed by consistently exerting effort in a manner similar to their own, it increases observers' beliefs that they have the abilities to overcome the comparable activities required to succeed. When models that individuals perceive to be similar to themselves succeed in a performance by exerting effort, it increases the belief in observers that they have the abilities to overcome similar performances. Likewise, observing others' failures despite high efforts decreases observers' self-efficacy beliefs and undermines their efforts. The effect of modeling on perceived self-efficacy is strongly influenced by the similarity with the models. The greater the similarity with the model, the more convincing the models' successes and failures are (Bandura & Wessels, 1994). The self-efficacy of the individual who sees that his/her peers are successful increases. Because when he/she will show the same performance, he/she thinks that the probability of being successful is high and becomes motivated. The opposite situation is also possible. If the observed individual fails, the observing individual may be affected badly (Schunk, 2009).

### **Social Persuasion**

Social persuasion is the third way of reinforcing the belief that individuals have the necessary abilities to perform successfully. Individuals who are verbally convinced that they have the abilities to perform certain performances tend to exert more effort in any challenge. However, individuals who are convinced that they lack abilities tend to avoid challenging performances (Bandura & Wessels, 1994). Individuals receive convincing information from their environment that they can succeed. This positive feedback increases self-efficacy, but if the individual subsequently fails to perform, the effect of the feedback is lost (Schunk, 2009).

The effect of negative evaluations from the environment on the individual shows more resistance to change than the effect of positive evaluations. In other words, the harmful effects of negative evaluations on an individual's self-efficacy belief are more difficult to change (Bandura, 1997). They are performance-oriented messages from individuals in the environment.

While positive evaluations increase an individual's self-confidence, negative evaluations cause a decrease in self-confidence. As a result, increasing the individual's encouragement that he/she can achieve success with advice and incentives may cause his/her expectations about self-efficacy to change (Demircan, 2018).

### **Somatic and Emotional States**

The fourth way to change self-efficacy beliefs is to reduce people's reactions to stress situations and change their negative emotional tendencies and misinterpretations of their physical states. How individuals perceive their reactions in stress situations is more important than the emotional and physical reactions they show. Individuals with high self-efficacy beliefs are likely to view their emotional arousal as an energizing facilitator of performance, whereas self-doubting individuals are likely to regard their arousal as debilitating. These physiological responses play an important role in individuals' health functioning and other physical activities (Bandura & Wessels, 1994). Physical and emotional states are the reactions of individuals to the action they perform. Stress, accelerated heartbeat may indicate that individuals have low belief that they will successfully complete the action (Schunk, 1991). In summary, it can be said that success tasted with a positive mood has a positive effect on the development of self-efficacy belief in individuals. When the researches are examined, self-efficacy beliefs are significantly influenced by the past experiences of an individual towards a performance, the feedback he/she receives while performing that performance, the individual's field of life and the professional groups he/she is in (Özenoğlu Kiremit, 2006). The four main sources of self-efficacy belief have been explained above. In addition to the sources of self-efficacy belief, it is also necessary to examine the effects of self-efficacy belief on the individual's performance. Bandura (1995) discusses the effects of self-efficacy belief in four items. These are cognitive processes, affective processes, motivational processes and preference processes.

### **Cognitive Processes**

Beliefs about individual competence can help to determine expectations about the outcome, and a self-confident individual expects to be successful as a result of his/her work (Bıkmaz, 2006). According to Pajares (2002), as an individual's self-efficacy belief strengthens, the effort, determination and perseverance shown for a performance increases. On the other hand, it has been observed that individuals with low self-efficacy beliefs avoid difficult performances, experience more stress, show low performance, and even give up.

### **Affective Processes**

Individuals with high self-efficacy beliefs are more calm and composed in the face of difficult performances, while individuals with low self-efficacy beliefs perceive actions as more difficult than they actually are and increase their stress and anxiety levels (Pajares, 1997).

### **Motivational Processes**

Self-efficacy beliefs determine the effort individuals will make when faced with a problem or an unpleasant experience. An individual who is worried about his/her abilities may make little effort or give up completely in this difficult situation. However, an individual who has confidence in his/her abilities will make more effort and act with determination (Bıkmaz, 2002). In other words, individuals' belief in their self-efficacy determines their performance and effort in the face of actions.

Self-efficacy beliefs increase or limit individuals' motivation for the goals they set for themselves, the efforts they make and their perseverance in the face of difficulties. A low level of self-efficacy beliefs leads to a decrease in individuals' efforts and a tendency to give up easily (Gredler, 1997).

### **Preference (Selection) Processes**

Individuals' choices are affected by their self-efficacy beliefs. Individuals who do not fully trust in their abilities avoid tasks that they believe will exceed their abilities. Individuals who fully trust their abilities strive for success instead of giving up in the face of a difficult task. They also organize environmental conditions as necessary to achieve success (Bıkmaz, 2006).

As a result, while self-efficacy beliefs determine the effort that individuals will spend in achieving the goals they set for themselves, they also affect their ability to cope with the difficulties that may arise in this process. Individuals who believe that they can successfully finalize a performance strive without giving up in the face of difficulties. However, individuals who do not sufficiently believe that they will be able to successfully complete a performance may reduce their efforts and even give up in the event of a possible difficulty or failure.

In order to create developed societies, individuals need to be well educated and have high self-efficacy beliefs. The way to do this is through education. Teachers, who are the people who raise individuals and provide them with behaviors, are of great importance at this point and undertake important duties. For this reason, it is important to address the self-efficacy beliefs of teachers, who are the practitioners of the education system that is the creator of developed societies, towards their profession.

## Teacher Self-Efficacy Beliefs

A teacher is a person who guides individuals to experience changes in their behaviors that will increase the quality of their personal and social lives by using theoretical knowledge (Sönmez, 2006). Today, with the educational requirements of the age, differentiated student needs and new approaches in education, new professional responsibilities are imposed on teachers. In this context, teaching is recognized as a profession that requires high competencies. The Ministry of National Education (2017) defines teacher competence as “the knowledge, skills and attitudes that teachers should possess in order to fulfill the teaching profession effectively and efficiently.” In the “Draft General Competencies for the Teaching Profession” prepared by the Ministry, the general competencies that a qualified teacher should have are grouped under six headings (MoNE, 2017). These competency areas are as follows: Personal and professional values - professional development, student recognition, learning and teaching process, monitoring and evaluation of learning and development, school-family relations, curriculum and content knowledge.

The educational institutions in which individuals live play important roles in the development of their self-efficacy beliefs. In these educational institutions, “teachers” undoubtedly play one of the most important roles in developing self-efficacy beliefs. Teachers’ ability to provide effective learning environments for their students cannot be separated from their self-efficacy beliefs towards the teaching profession (Akkoyunlu et al., 2005). One of the subjects in which the concept of self-efficacy is examined in various aspects is teacher education and teaching profession. In addition to teachers’ beliefs in education, their beliefs in their competencies to fulfill their duties and responsibilities directly affect their teaching activities. At this point, the prominent concept is self-efficacy belief (Ilgaz et al., 2013).

Teachers’ fulfillment of professional competencies is related to their good education and their belief in themselves that they can fulfill these duties and responsibilities (Özenoğlu Kiremit, 2006). Teachers’ beliefs in their own capacities to provide quality education to their students and to solve the problems they encounter in this process are considered important (Özdemir, 2008). It is of great importance for teachers to overcome the problems they face and to have self-confidence that they can produce alternative solutions to problems in order to create a qualified learning environment (Özenoğlu Kiremit, 2006). In other words, when a teacher is faced with a problem situation, his/her belief that he/she can solve this problem with his/her own skills depends on his/her self-efficacy beliefs.

There are different definitions of the concept of “teacher self-efficacy belief” in the literature. Tschannen Moran and Woolfolk-Hoy (2001) defined teachers’ self-efficacy beliefs as the confidence teachers have in their own abilities to

achieve the success they aim for their students. Aston (1984) defined it as the level of teachers' belief in their own ability to improve students' performance. Skaalvik and Skaalvik (2009) defined teacher self-efficacy beliefs as a teacher's belief in his/her ability to plan, organize, and implement the actions necessary to achieve educational goals, while Schunk (2009) defined it as teachers' beliefs about their own capacities in relation to teaching. Gibson and Dembo (1984) defined teacher self-efficacy beliefs as teachers' beliefs about their ability to guide students towards desired behaviors. Benzer (2011) defined teacher self-efficacy beliefs as teachers' beliefs that they can demonstrate the performance required for successful teaching activities.

The concept of self-efficacy can be used in the field of education and training to explain the individual differences in teachers' activities. Thus, it can make important contributions in analyzing and improving teachers' behaviors (Atıcı, 2000). Bandura (1997) explained that teachers' self-efficacy beliefs are determined by their beliefs that they will be successful in classroom management.

### **The Effect of Self-Efficacy Belief Levels on Teacher Behaviors**

Self-efficacy is contagious. Teachers with high self-efficacy enable their students to increase their self-efficacy and at the same time increase the achievement of students at different levels, along with their belief in achievement. Conversely, teachers with low self-efficacy raise students who are not confident enough in themselves and have no belief in their ability to succeed (Pajares, 2005). Teachers with low self-efficacy constantly try to control the behavior of students in the classroom by applying punishments for students to work, and they also have pessimistic thoughts about students' motivation. Teachers who behave in this way undermine students' cognitive development and their positive views of themselves. In contrast, teachers with strong self-efficacy create opportunities for their students to experience a sense of accomplishment (Telef, 2011).

While teachers' successful experiences increase their self-efficacy, successive failures may decrease their self-efficacy (Ayдын et al., 2013). In other words, the successful outcome of a performance encourages the individual to succeed in similar performances in the future. In this context, individuals' beliefs about their self-efficacy can be the determinant of their ideas about the results of the performances they have not yet realized. This information we have can be expressed as the reason why teachers at the same level in terms of skills and experience perform at different levels (Kurt, 2012). Teachers need to believe that they have the professional skills required for teaching in order to provide efficient educational environments for their students (Akkoyunlu et al., 2005).



Teachers with stronger self-efficacy beliefs tend to exhibit distinctive observable behaviors such as effort, persistence, enthusiasm and confidence. These teachers use teaching time effectively and encourage students to learn for longer periods of time. Teachers with strong self-efficacy treat all students with warmth and concern, especially those with low ability (Lewandowski, 2005). On the contrary, teachers with low self-efficacy beliefs try to control students' behaviors and demotivate them. Teachers with high self-efficacy believe that it is their responsibility to see that children learn and when their students fail, they look for ways to be more helpful to them. Teachers with high self-efficacy feel good about teaching, about themselves and their students, while teachers with low self-efficacy feel frustrated and negative about teaching (Aston, 1984). Teachers with low self-efficacy may avoid activities that they think will exceed their capacities and may not help students who are having difficulties. They make much less effort in finding materials and may not be able to continue their teaching in a way that students understand. Teachers with high self-efficacy tend to develop activities that challenge them, contribute to their students' achievement, and help struggling students (Schunk, 2009). Teachers with high self-efficacy tend to make use of different methods, techniques and practices during teaching, conduct research to improve them, and utilize strategies where the focus is on the students, while teachers with low self-efficacy are known to complete their lessons by reading from books without considering the needs of students (Henson & Plourde, 2001; as cited in Duban & Gökçakan, 2012).

Teacher self-efficacy belief is a factor that affects teachers' performance as well as their success. Teachers with low self-efficacy beliefs cannot show the highest efficiency expected from them in their lessons even if they are successful in their fields. Since teachers' self-efficacy beliefs affect students' willingness to learn, it causes students' attitudes to be positive and, accordingly, academic achievement to increase to a great extent (Çetin, 2004). At the same time, teachers with strong self-efficacy beliefs are determined and successful in the process of planning and carrying out instruction (Eker, 2014). Especially classroom teachers are the individuals that students look up to the most. Therefore, teachers' self-efficacy beliefs are highly influential on students' personality development from an early age (Kiremit, 2006). To summarize, teacher self-efficacy beliefs have an important share in students' success. Because it is the teacher who determines the learning process, supports it with various practices and helps students develop in many ways.

When teachers' ability to create an effective teaching environment is considered in terms of self-efficacy belief, they should believe that they have the teaching skills that will enable them to create an effective teaching environment (Akkoyunlu et al., 2005). Teachers who cannot be successful in classroom management cannot be successful in keeping students under

control and directing them to learn. However, this negative atmosphere affects both the teacher and the students negatively. When a teacher fails to manage the classroom, he/she cannot perform successfully and gets angry because he/she cannot cope with the students (Erden, 2001). The ability to provide classroom management is an important step for teachers. For this reason, teachers should give importance to improving their classroom management skills (Ekici, 2008).

There is a close interaction between effective classroom management and students' achievement, teachers' job satisfaction and self-efficacy. For this reason, it is very important that teachers' classroom management knowledge and skills are at an adequate level. Because only teachers who are competent and self-confident in their field can reach the qualifications to undertake important tasks in the development of the country. One of the most important concepts at this point is the concept of self-efficacy. Because one of the factors that influence individuals to achieve successful results in some behaviors is their self-efficacy beliefs about that behavior (Ekici, 2008). Since teachers' self-efficacy belief level is related to students' achievement gains, it is important to determine how teachers with different self-efficacy belief levels will behave in the classroom. Teachers with low self-efficacy beliefs spend more time on small group instruction, while teachers with high self-efficacy beliefs address the whole group more (Gibson & Dembo, 1985).

Based on the results of 88 studies conducted in the field of teacher efficacy, Ross (1988) determined that there could be a relationship between teachers' self-efficacy beliefs and their behaviors under 6 main headings. Accordingly, teachers with high self-efficacy beliefs (Özerkan, 2007):

1. To use new approaches and techniques in the teaching process,
2. In classroom management, to enable students to control themselves and to reduce student control from the east,
3. Show more concern for low achieving students,
4. To increase students' self-perception of their academic capacity,
5. To set goals that are achievable,
6. They are more inclined to show determination in the face of failure or problems.

It is thought that teachers' self-confidence and belief in success in fulfilling professional competencies can contribute to the lives of students. In addition, among the teachers who are the cornerstones of education, the classroom teacher, where the most time is spent and basic knowledge and skills are acquired, has a great impact on students. For this reason, the knowledge, skills, behaviors, experiences and virtues that students will gain from the

classroom teachers they encounter in the first years of their educational life constitute their first steps towards forming strong characters and becoming good individuals. In this sense, classroom teachers play important roles for students to be both a good student and a good individual.

Professional competencies of classroom teachers are of great importance in the effective implementation of primary school programs. The ability of classroom teachers to create productive learning environments and direct their students' learning is related to their competencies. Teachers who have high beliefs about their competencies can provide better learning opportunities for their students and prepare them as better equipped individuals for the future.

With the changing world, the duties and responsibilities of teachers are also changing. Teachers are no longer individuals who only lecture and measure the success of students through exams. It is important to strengthen the self-efficacy of teachers who influence the individuals of a changing society. The ability of teachers to be more productive and to raise students as more creative individuals will develop in proportion to the increase in their self-efficacy (Sapançı, 2010). As a result, teachers' self-efficacy beliefs about fulfilling their duties in the teaching process depend on students' achievement, motivation, classroom management skills, method preferences, time allocated for teaching, and the level of effort made for children to succeed (Bıkmaz, 2006).

### **Change in Education**

Change is one of the concepts used in every field today. There is a rapid change in social, cultural, political, economic, technological and many other fields. This concept, which stands out in every field, has become an unavoidable phenomenon for individuals, societies and organizations. The rapid increase in knowledge, rapid development and rapid communication make change necessary (Yıldız, 2012). With this rapid change, systems, information, technology, methods and techniques are constantly changing. Organizations are in great need of change, as developments are rapid and directly affect people's lives (Güçlü & Şehitoğlu, 2006).

Change, which is a process, is a state of making a difference that takes place over a certain period of time. Change can occur spontaneously or suddenly, or it can be evolutionary and gradual, or it can occur suddenly and rapidly (Çınar, 2005). According to Çınar (2005), change is a prerequisite for development. However, change is a concept whose direction is not clear. Unlike the concept of change, change is a planned movement initiated by the management to differentiate behaviors and processes in order to make individuals, groups or organizations more efficient. If change is to be experienced due to a problem, the direction of change should be to eliminate this problem by setting goals. However, change stems from the effort to prevent mediocrity and to bring the

organization to the best performance. All this is realized through innovative and creative thinking. The most important feature that defines the age we live in is change. Changes in economic, social, cultural and technological structures have brought about many innovations. There is a more intense and faster process of change between countries than in the past. It is possible to say the same thing in the field of education. In our age, education has ceased to be an activity carried out within the boundaries of the school and has become a complex endeavor carried out in interaction with its environment. This differentiation has brought along the need for change in education (Çolakoğlu, 2005).

Rapid developments in the world, the explosion of information and the impact of globalization push educational organizations to adapt to these developments as in all organizations. In an environment where information is rapidly consumed and loses its validity in a short time, it is not possible for educational organizations to keep apart from these developments. Educational organizations, which provide input for other organizations with their outputs, should not only keep pace with this change but also be the pioneers of change. Because education affects change and is also affected by change (Güçlü & Şehitoğlu, 2006). Özdemir and Cemaloğlu (2000) state that educational organizations, like all organizations, are affected by changes in environmental systems. However, one of the main features that distinguish educational organizations from other organizations is that educational organizations have the responsibility to initiate change. Organizations have to change and innovate continuously in order to sustain their existence, become more efficient, reach their goals more effectively and have competitive power (Çalık, 2003). Educational organizations are both the cause and the result of change due to their social duties and responsibilities (Demirtaş, 2012).

Considering the changing living conditions, the traditional concept of education is inadequate and updating its content becomes a necessity. There is a need for change in education based on policies, goals, structure, functions, programs and technological developments (Arslan & Erarslan, 2003). It can be accepted that the need for change is not only a situation specific to commercial organizations, but also a situation that concerns other non-profit organizations, especially educational organizations. It is a widely accepted fact that the safe and stable external environment, which has been accepted as valid especially for public institutions since the 1970s, is no longer valid. Accordingly, it can be stated that the need for change is also necessary for the Turkish Education System. Turkey's European Union harmonization process, the qualitative and quantitative increase in the demand for education, and the developing and expanding technology have emerged as some dynamics that require the need for change in the Turkish Education System (Kondakçı et al., 2010).

The eight steps to change the organization (Kotter, 1999) are: creating a sense of urgency, shaping a solid guiding unity, creating a vision, communicating this vision, empowering all organizational members to act in line with this vision, planning and preparing short-term gains, consolidating improvements and creating further change, and institutionalizing new approaches (Güçlü & Şehitoğlu, 2006).

As a result, the variables of change in the field of education can be considered and analyzed as forces forcing educational systems such as new needs, demographic movements, new management approaches and technology, while the existing political, economic and social system, management approaches, practices and bureaucratic structure can be considered and analyzed as forces preventing change (Gökçe, 2005).

### **Readiness for Change**

Lewin (1947) argues that during an individual's progression through change, three stages of freezing, mobilization and revitalization are experienced (Armenakis et al., 2007). On this basis, Armenakis, Harris and Mossholder (1993) proposed a model of readiness and argued that readiness is a precursor to resistance and adoption behaviors (Armenakis et al., 2007). Change readiness is the beliefs of organizational members about the extent to which changes are necessary and the organization's capacity to make these changes successfully (Armenakis et al., 1993). In other words, it is the cognitive creator of behaviors that resist or support change. The idea of readiness for change is also related to resistance, because reducing resistance to change facilitates readiness for change to some extent (Armenakis et al., 1993). Armenakis et al. (1993) classified the change process in three stages and emphasized that the first stage involves readiness, the second stage adoption and the third stage institutionalization.

Readiness for change can be measured from various perspectives. The first aspect in the change process is the degree to which employee involvement is allowed. The second perspective is the organizational change content of the particular initiative being introduced. The third perspective is the organizational context, i.e. the conditions and environment in which employees are located. Finally, the fourth perspective is the individual characteristics of the employees (Armenakis et al., 2007).

Readiness for change is a sustainable successful change. Readiness refers to individuals' willingness to change, different from their current thoughts (Bernerth, 2004). In other words, readiness refers not only to the willingness to support and implement change, but also to the formation of positive feelings and beliefs towards change (Kayasandık, 2017). Zayim (2010) explains change readiness as "an employee's willingness to initiate and support change efforts, as well as a positive employee attitude that is a

necessary condition for overcoming resistance to successfully implement organizational change intervention”. Weiner (2009) explains change readiness through social cognitive theory and motivation. According to social cognitive theory, in order to be ready for change, employees should be made willing to initiate change and be more motivated to embrace change. According to Weiner (2009), individuals with a high level of change readiness show more effort in the change process and are more resistant to obstacles that may arise. These individuals also work in cooperation with other employees and show leadership qualities.

Readiness reflects cognitions that can influence individuals’ behavior in relation to change, including the degree of resistance to or support for change and the efforts made to make it happen. A high degree of readiness for change contributes to support for change and reduces resistance to its implementation. Likewise, low readiness for change makes it difficult to implement change (Armenakis, Harris, & Mossholder, 1993).

If the attitude of readiness for change is neglected in a change process, change practices may be actively or passively resisted by some organizational members (Self, 2007). In other words, attitudes of readiness for change constitute the first step of change. The positive attitudes of organizational members towards change will also contribute to the successful implementation of change. Eby et al. (2008) also stated that in order for change to be successful, organizational characteristics should support change.

The five important stages of the cognitive dimension in readiness for change are explained below (Armenakis & Harris, 2002; as cited in Armenakis et al., 2013):

- The first stage is the formation of a belief in the necessity of change in the individual.

- The second stage is to recognize the existence of a suitable alternative as a necessity.

- The third stage is that the individual has the competence to carry out the change belief.

- The fourth stage is the belief that the individual will be supported by the organization in terms of sufficient resources and information.

- The fifth stage is the individual’s assessment of the benefits he/she will experience in his/her job and role after the change.

Organizational readiness for change is maximized when employees internalize the change and are confident that the change will result in success. However, inconsistent messages from change managers to employees,

inadequate interaction of information between groups or units within the organization, or a lack of a common experience base indicate inadequate readiness (Weiner, 2009). In an organization, ignoring, not understanding or neglecting the negative attitudes of employees towards change leads to a number of negativities that will increase in the change process. The failure of the change process will cause employees to lose their trust in managers and their belief in the necessity of change. For these reasons, the organization should be made ready for change as a priority in change practices (Kondakçı et al., 2010). Gılıç (2015) also states the importance of organizational members believing in the necessity of change and internalizing change for the successful outcome of the change process. Individuals who are convinced of the positive results that change will bring and embrace the inevitability of change actively take part in change practices. Employees' perspectives on change practices provide information about their level of readiness for change. Since employees' level of readiness for change and the successful outcome of the change process are interrelated, it is important to determine the factors affecting employees' readiness for change (Gılıç, 2015).

### **Factors Affecting Readiness for Change**

The first factor that can influence change readiness is the content specific to the proposed changes (Armenakis et al., 1999). Content factors are related to administrative, procedural, technological or structural characteristics of organizations. The second factor is the context factor, which is the conditions and environment in which the change takes place. Organizational culture and organizational climate, commitment to the organization and trust in organizational managers can be considered as context variables that can affect employees' readiness to change. The third factor is the process dimension. The change process refers to the steps followed during implementation. One dimension of the change process can be the degree to which employee participation is allowed (Holt et al., 2007). Effective communication with employees will help them make sense of the change and its details and understand its necessity (Weick, 1995). The last factor affecting readiness for change is individual characteristics. Due to personal differences among individuals, some employees may tend to adopt organizational changes more than others and be more active in the implementation process (Holt et al., 2007).

In any organizational transformation, employees enter into a decision-making process by making sense of what they hear, see and experience. At the end of the process, they engage in supportive or resistant behaviors. In organizations, change messages are usually communicated to employees by people who are not formally leaders (e.g. opinion leaders). Moreover, these messages are communicated within the framework of specific strategies such as persuasive communication, active participation and human resource management (Armenakis et al., 2007).

### **Readiness for Change and Teacher Self-Efficacy Beliefs**

Efficient and desirable acceptance of changes is significantly related to readiness for change (Kayasandık, 2017). The acceptance of the changes to be made in the education system by teachers is considered important for the efficiency of the system. It is argued that the ability of teachers to adapt to the changes to be made in the education system and to implement these changes in the process is related to the level of their self-efficacy beliefs towards the teaching profession.

Education systems consist of many elements that cover the society as a whole. However, the “teacher” element stands at the most striking point of the system. Because achieving the goals in education depends primarily on the performance of the teacher in the learning environment (Baloğlu, 2001). According to Ataünal and Özsoy (2001), while the education system aims to teach students the knowledge and skills appropriate to the development and needs of the student through the teacher, the task of guiding the individual is always the teacher’s. Teachers also have the responsibility to fulfill their duties in accordance with the basic principles and objectives of Turkish National Education (Ataünal, 2000).

Adapting to the unstoppable technological developments of our age is among the priorities of all organizations. Because organizations that cannot adapt to today’s technology cannot be expected to maintain their success. Educational organizations are both affected by the changes in society and realize the changes in society. Since schools are also an educational organization that educates individuals, it is unthinkable that schools are not affected by change. Schools, which are in constant interaction with their environment, have to lead and pioneer today’s change activities.

One may wonder whether education affects the changes in society or whether the result of education brings about these changes. Sociologists emphasize that this cause and effect relationship is reciprocal; at the same time, they state that both social changes force education to change in a certain direction and that it is possible to change society in line with the targeted change through education (Sağ, 2003). According to Tezcan (1981), while a change in education affects other parts of the social structure, it is also affected by the changes occurring in these parts (Sağ, 2003). One of the most important elements of these changes in the educational organization is teachers. Teachers’ opinions should also be taken into consideration in any change and innovation process to be experienced in schools. Because school administrators and teachers are the implementers of change. Teachers who embrace change and are ready for change find the power in themselves to adapt the school environment and students to this change. When teachers act with the belief that the change will yield successful results, it prepares the



ground for more productive results.

The successful results of the change process in educational organizations depend on the ability of teachers, who are one of the important elements of the organization, to take a positive attitude and develop behaviors towards change. For this reason, it is important to know the readiness levels of teachers for change before entering the change process in order to prevent possible resistance and to carry out planning, implementation and evaluation studies in line with the readiness levels of teachers (Levent, 2016). Beycioğlu and Aslan (2010) emphasize that the more knowledge teachers have about change, the healthier the change process and outcomes will be and the change will gain continuity. Teachers who feel competent in the change practices to be carried out in schools will be able to manage this process better and carry out more productive activities.

While changes are taking place in the education system, teachers are expected to be ready for this situation in fulfilling their profession. Teachers' adoption and implementation of these changes are dependent on their self-efficacy level. It is possible for teachers to gain professional competencies in their pre-service education and to work efficiently in their professions afterwards if they can develop professional self-efficacy beliefs. However, the changes that may occur in the education system in the future and the need for teachers to keep up with these changes should not negatively affect the strong self-efficacy beliefs they have developed. In other words, teachers should strive to be ready for changes in social life or in the field of education and to prevent these changes from negatively affecting their professional perceptions.

Administrators and teachers are the ones who implement change in schools. Without taking their opinions and suggestions into consideration, change initiatives cannot be adopted sufficiently and the desired results cannot be achieved. For a successful change, teachers need to warm up to the phenomenon of change or prepare themselves for change (Beycioğlu & Aslan, 2010). (Beycioğlu & Aslan, 2010). Balcı (1993) emphasized the importance of teachers in the process of change in education. According to him, it is difficult to realize changes that teachers do not find appropriate. It should be ensured that teachers adopt the change and see it as valuable, and that the aims of the change and the aims of the teachers are compatible (Aydoğan, 2007). The belief that the success of change implementations is largely related to employees' perspectives on change and their readiness for change (Armenakis et al., 1993; Bernert, 2004) has made readiness for change one of the most important issues that change researchers have investigated. Armenakis et al. (1993) defined readiness for change as a precondition that determines whether employees have a positive or negative attitude towards change. In other words, change readiness is defined as the level of an employee's belief, attitude and intention that change is necessary and that the organization he/she belongs to

can successfully conclude this change. When the literature is examined, there is a need for more information on this subject since there are very few studies explaining the relationship between teacher self-efficacy beliefs and readiness for change (Tuğtekin et al., 2018).

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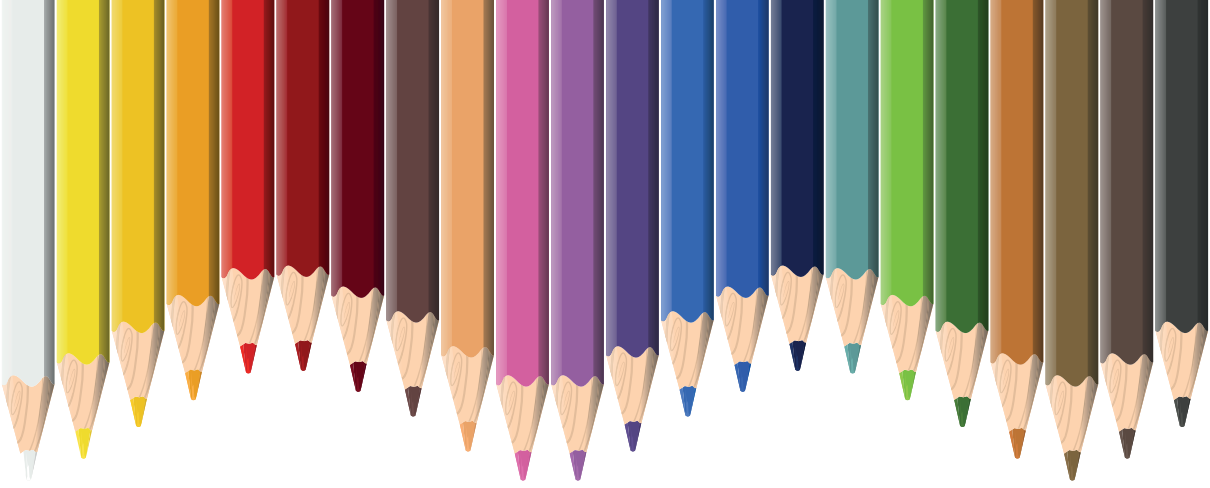
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# Chapter 19

## **INTEGRATION OF DIGITAL TECHNOLOGIES IN MATHEMATICS EDUCATION: PEDAGOGICAL PERSPECTIVES AND INNOVATIVE PRACTICES**

*Gamze Mercan<sup>1</sup>*

## 1. Introduction

Educators have long been exploring various strategies and approaches to enhance the quality of education and improve learning processes. Studies in the field of mathematics education have been conducted across numerous areas, including student achievement, learning environments, teacher training, and curriculum development. In recent years, attention has been drawn to the integration of information and communication technologies (ICT) into mathematics (Marbán & Mulenga, 2019), as the rapid advancements in these technologies have impacted all aspects of life. The proliferation of smartphones, computers, and internet-enabled technologies in education and media has accelerated research in this field (Setiyani et al., 2020). The swift development of digital technology, the widespread availability of portable and stationary devices, and the enhanced capability to network and share information have led to a technological revolution in education (Yang, 2013).

With technological progress, digitalization has become a part of life and has found its place across all levels of education. This transformation has also influenced teaching and learning methods. While the traditional model of a teacher lecturing in a classroom and students passively listening was once acceptable, today's education has moved beyond this one-way communication. The advent of digital technologies has enabled students to shift from passive listeners to active participants in interactive learning.

The concept of technology is interpreted as the collective use of computers, calculators, mobile devices, smartphones, and software or applications that offer interfaces between users (Freiman, 2014). The integration of technology with education is a complex process involving many components. Therefore, like with all innovative concepts, every aspect of technology must be carefully considered before it is incorporated into education (Haddad & Draxler, 2002). At this point, while digitalization in education systems worldwide is increasing, many countries are implementing action plans to accelerate the process (Lindberg & Olofsson, 2018).

Regardless of the technology in question, attention must be paid to the balance that needs to be established to make technology educationally beneficial and mathematically useful (Artigue, 2007). However, advancements in digital technology require rapid action to establish this balance. For instance, while studies on the use of Logo as a teaching tool continue, dynamic software has been developed. Even as the initial challenges of integrating digital technology in mathematics education remain unresolved, new concepts that enable mathematical experimentation have entered the educational scene (Borba et al., 2016). This rapid change has influenced both the content and the methods of instruction, and the concept of the virtual classroom has been introduced to the literature alongside the physical classroom (Engelbrecht et al., 2020).

## 2. General Information

### 2.1. Use of Digital Technologies in Mathematics Education

Digital technology is defined as any product or service that can be used to create, display, distribute, alter, store, transmit, and receive information in a digital electronic form. In this context, the general term for digital technologies used includes: (1) internet networks and the web services, social networks, and online libraries supported by these networks; (2) programs and applications connected to or installed on a network, virtual environments, and games; (3) personal computers, mobile devices, digital whiteboards, and other hardware; and (4) files, information, and other types of digital content (Redecker, 2017).

In the last twenty years, significant research has been conducted on the use of digital technologies in the teaching and learning of mathematics. These studies aim to improve mathematics education by employing technology in classrooms (Lagrange & Kynigos, 2014). Particularly, global crises have starkly revealed the importance of technology in the educational process. These developments are seen as an opportunity by mathematics educators (Attard & Holmes, 2022), as technology-supported mathematics teaching offers the chance to understand how mathematics is used in the real world and to practice it beyond mere memorization of formulas and rules (Olive et al., 2010). The opportunities provided by technology enable students from different locations to participate in classes in a digitized classroom environment. This situation creates a platform for interaction with peers, fostering a diversity of knowledge. However, the digital environments created by educational technologies are not intended to replace the traditional classroom but to serve as an alternative (Singh, 2021).

Computer-based learning includes the use of digital media formats such as text, graphics, sound, and video, designed in various ways to create symbolic, fixed, and animated representations of problems or other learning activities (Bodemer et al., 2004). Especially in recent years, a wide variety of digital tools have been developed for mathematics education. These digital tools, which vary greatly in terms of mathematical focus, instructional content, user-friendliness, and other features, can perform algebraic operations, graphical representations, statistical analyses, and geometric visualizations (Drijvers, 2019).

Today, there are various applications, software, and online or offline environments available for mathematics learning and teaching. These tools provide significant advantages in enhancing students' mathematical skills, problem-solving abilities, and engagement and motivation for the subject. For example, interactive simulations and dynamic visual applications can make abstract concepts more concrete and facilitate learning. Furthermore, students can access mathematics materials suitable for different learning styles through

online platforms. However, despite the advantages offered by digital tools in mathematics education, their limitations should not be overlooked. In this context, technology must be used carefully and with balance.

## **2.2. Advantages of Digital Technologies in Mathematics Education**

With new developments, the combined use of physical tools and digital technologies in mathematics education has become a research-worthy area. Digital technologies possess capabilities that were not anticipated in the past (Maschietto & Trouche, 2010). For instance, the traditional education system is inherently constrained by time and space. Digital technologies provide individuals with opportunities to meet their learning needs and overcome barriers (Ebersöhn et al., 2015). Additionally, as students progress to higher grades, they may develop negative feelings toward increasingly difficult and abstract mathematics. For students who perceive mathematics as a mere obligation, studying math out of exam anxiety can lead to a lack of motivation. In this context, digital games offer an alternative pedagogy to boost motivation among students (Yong et al., 2016). For example, delivering learning materials through digital technologies in a colorful way can pique students' curiosity and enhance the retention of information (Jobirovich, 2021).

In mathematics, digital technologies used are providing students with multiple representation sources and connection mechanisms that enable them to dynamically explore complex mathematical ideas and structures (Moreno-Armella et al., 2008). Digital tools, such as dynamic geometry software, can meet a wide range of needs from the drawing of precise geometric shapes to the discovery of new geometric theorems, enhancing success, and developing discussions (Ilhan & Aslaner, 2020; Leung & Bolite-Frant, 2015). In summary, digital technologies offer numerous benefits, such as enabling students to construct mathematical knowledge, interact with this knowledge, and understand the subject more accurately (Olive et al., 2010).

Internet-based digital technologies, like Web 2.0 or social media tools, have reshaped the rules in terms of students managing their own learning and supporting collaborative social environments (Neira et al., 2017). Blended and virtual learning, flipped learning, game-based learning, local and global collaboration, online assessment and reporting, and active participation in online communities are among the wide range of uses of digital learning tools. In this regard, Engelbrecht et al. (2020) have stated that the concepts of in-class and out-of-class have changed with digitization. Researchers have emphasized the change in the roles of students and teachers and the developments in receiving and sharing information with online learning.

Systems such as Mathematica, Maple, MuPAD, MathCAD, Derive, and Maxima can enable students to be active participants in the process of discovering and reinforcing knowledge. Thus, learners can enhance their

theoretical understanding and develop a more in-depth learning strategy (Kumar & Kumaresan, 2008). Additionally, dynamic geometry software can provide new perspectives to students on geometry by facilitating the experimentation and discovery of geometric formations and connections (Iji et al., 2018). The point highlighted here is that students should learn to use technology not only for its sake but also for learning mathematics. New technologies such as 3D printing, photomath, augmented and virtual reality are providing new opportunities for learning. Although there are significant differences in how successful these connections are, it is stated that technology will help establish connections with other applications as well as between school and home (Bakker et al., 2021). For example, the use of digital technologies facilitates the process of teaching and learning mathematics. Students can thus gain mathematical experiences and achieve positive developments in their mathematical performance (Cahyono & Ludwig, 2019). Furthermore, the positive contributions of digital technologies to individual learning, enabling learners to access the content they want, distance learning, and their interests and motivations have been mentioned (Jobirovich, 2021).

With all these positive benefits, virtual objects created with digital tools, mathematical modeling, or dynamic visuals provide ease in teaching or learning concepts that are difficult and sometimes impossible to explain in two dimensions. Digital contents can also be used in establishing the connection between mathematics and daily life or in different representations of mathematical expressions. These technological contents or resources can be used to solve mathematical problems, as well as allowing learners to approach the question differently or think of different solutions.

The rapid development of digital technologies is enabling the concretization of mathematical objects and their relationships and making changes to these virtual objects possible. It is of great importance for students to establish the connection between theory and practice for a faster and more complete understanding of concepts. Digital technologies can establish this connection and provide possibilities beyond the limits of our imagination. In summary, digital technology can be used inside or outside the classroom to make learning more fun, interesting, meaningful, and lasting.

#### **2.4. Limitations of Digital Technologies in Mathematics Education**

The rapid development and widespread use of digital technologies are said to fall short in some respects compared to traditional methods (Öztop, 2022). There are various reasons for the limitations in the use of technology in the classroom. These include insufficient pedagogical adaptation to the rapid changes in technology by teachers, intervention of external factors, and prejudices about the benefits of digital technologies. At this point, it is necessary to better understand how technology contributes to effective learning processes (Dalby & Swan, 2019). Even if teachers are willing to use innovative

practices in the classroom, problems such as crowded classrooms and short lesson durations can hinder the use of technology (Voogt & Pelgrum, 2005). In terms of interaction with digital curriculum resources, most teachers can now access many educational resources for free. However, they often struggle to select from existing materials to suit educational goals and classroom contexts (Pepin & Gueudet, 2018).

Some technical and pedagogical limitations of digital technologies can also be listed. For example, technical problems such as screen size related to the used device, connection problems, cost, access, infrastructure requirements, and limited battery life can be mentioned. Regarding users, negatives such as digital addiction, low acceptance level of technology, social problems, and causing distractions can be listed. Many reasons, such as a lack of awareness of how technology will affect learning, can be added to these. In summary, the integration of digital technologies into mathematics education is not an easily achievable issue and its success can sometimes depend on complex and very different variables.

### **2.5. Teachers' Use of Digital Technology**

In addition to having good mathematical knowledge, teachers need to keep up with technology to use digital technologies effectively in the classroom (Ratnayake et al., 2020). Roberts et al. (2013) draw attention to the complexity of the interaction between technology, mathematics, and education, stating that this complexity is not specific to current technologies but can always occur when using tools in mathematics (Roberts et al., 2013). Research has shown that teachers have some concerns about using digital technologies. For example, it has been stated that teachers are hesitant about teaching on the board and using digital technology while doing so (Yong et al., 2016).

Walters et al. (2018) found in their interviews with teacher candidates that teachers generally use digital devices for purposes related to personal communication and messaging in daily life, and they are not very familiar with the educational applications of digital technology. Researchers have identified this as a reason for their reluctance to use digital technology in their classrooms, noting that although teacher candidates come from the digital age, they mostly use technology for communication and entertainment functions (Walters et al., 2018). Additionally, Topçu et al. (2014) found in their interviews about the benefits and potential harms of digital games that teacher candidates have a positive attitude towards the use of digital games in lessons, but do not feel competent enough to implement them (Topçu et al., 2014). In summary, teachers' past experiences with technology affect their thoughts about technology use and competence (Demir & Bozkurt, 2011).

The preparation of digital applications is a difficult and complex process. For example, while the use of mobile devices for communication outside of

school may seem simple, preparing a digital application like augmented reality is a complex and time-consuming process. Therefore, teachers tend to prefer using ready and simple applications in their lessons, while generally tending to avoid more complex digital applications. Moreover, teachers should experience the possible benefits or harms themselves before using digital tools in their classrooms. Teachers need to determine strategies suitable for students' needs, learning styles, and goals in advance to effectively integrate technology into the lesson. At this point, if it is desired that digital technologies contribute to students' learning, it should not be forgotten that teachers need to mediate the student-technology relationship. Donnelly et al. (2011) emphasize the importance of not leaving teachers alone in being successful in teaching and learning.

### 3. Example Applications

There are many and varied digital applications for mathematics lessons, both inside and outside the classroom. These include lesson presentation videos, online discussion-capable teaching management systems, dynamic desktop applications, digital games, online applications, and mobile applications. Some of these applications are as follows:

- **GeoGebra:** A dynamic application used to visualize mathematical concepts and solve mathematical problems (<https://www.geogebra.org/?lang=tr>).
- **Desmos:** An online application used in many situations such as graph drawing, function analysis, and visualization of mathematical equations (<https://www.desmos.com/calculator?lang=tr>).
- **Mathigon:** A platform that offers interactive learning experiences and contains animations, games, and interactive materials for exploring mathematics topics (<https://tr.mathigon.org/>).
- **Symbolab:** An online application that solves mathematical equations, draws graphs, and explains mathematical concepts (<https://www.symbolab.com/>).
- **Wolfram Alpha:** An online application that assists in mathematical calculations, graph drawing, solving mathematical equations, and researching mathematical concepts (<https://www.wolframalpha.com/>).
- **Augmented Reality:** Augmented reality is defined as a situation where real-world content dynamically overlaps with virtual information that is consistent in location or content-sensitive (Klopfer and Squire, 2008). To create an augmented reality application, it is necessary to have knowledge of different programs, applications, or software (For example: Unity, Blender, and Vuforia).
- **Khan Academy:** An online educational site where instructional videos are accessible (<https://tr.khanacademy.org/>).

#### 4. Conclusion

The primary aim of innovations in education today is to increase students' knowledge, skills, and interest in the subject. Achieving this involves removing barriers in teaching processes and assisting teachers and students. In this context, the interaction between teachers and students is extremely important. Besides planning and designing pedagogical activities, teachers should enrich learning activities, improve their content and structure, and impart study skills to students. Providing students with the skills to independently search and find information and apply theoretical knowledge in practice is valuable in this sense. Such an educational approach will contribute to increasing students' interest in the subject, enhancing their knowledge level, and promoting lasting learning.

The use of new technology and digital resources in mathematics classrooms can provide positive benefits to students who have not yet fully participated in learning processes. Digital technologies can be used to meet diverse student expectations, encourage more participation in class, and facilitate understanding of mathematical concepts. Digital tools can offer interactive learning experiences by providing visual and auditory support, thereby helping students fully realize their potential in mathematics education.

The future of digital technologies in mathematics education will be shaped by adopting an approach that considers students' needs and various learning styles. It is important for teachers to develop their skills in using technological tools effectively and integrate these tools into their lessons. This is because the use of digital technologies in mathematics education has great potential to enhance students' mathematical abilities and understanding. It is crucial for teachers and educational institutions to appropriately use technological advancements that support traditional education, as this will assist in developing students' mathematical thinking skills.

#### 5. Recommendations

Here are some recommendations for further exploration and development:

- **Investigate Different Technologies:** Explore a range of digital tools and platforms, like educational apps, interactive whiteboards, and online learning environments, to understand how each can contribute to mathematics education. This should include both hardware (like tablets and smartboards) and software (like mathematical simulation programs).
- **Professional Development for Teachers:** Implement ongoing training programs for educators to ensure they are proficient in using these technologies. This could include workshops, online courses, and peer-to-peer training sessions.
- **Curriculum Integration:** Work on integrating technology seamlessly



into the mathematics curriculum. This could involve redesigning lesson plans to include digital tools, creating online resources for students, or incorporating educational games that teach mathematical concepts.

- **Research and Evaluation:** Continuously research and assess the effectiveness of technology integration in mathematics education. This could involve pilot studies, student feedback, and academic performance analysis.

- **Accessibility and Inclusivity:** Ensure that the technological tools used are accessible to all students, including those with disabilities. This might require adaptive technologies or alternative methods of instruction.

- **Parent and Community Involvement:** Engage parents and the community in understanding and supporting the use of technology in education. This could include informational sessions, community-based learning projects, or partnerships with local businesses.

- **Embrace Change and Innovation:** Stay open to new technologies and teaching methods as they emerge. This could mean experimenting with virtual reality, artificial intelligence, or other emerging technologies that have potential in education.

- **Focus on Critical Thinking and Problem Solving:** Use technology not just for computational purposes, but to enhance students' critical thinking and problem-solving skills. Technology should be a tool to explore new ways of understanding and applying mathematical concepts.

- **Balance Between Traditional and Digital Methods:** While integrating technology, maintain a balance with traditional teaching methods. It's important to recognize the value of face-to-face interaction and hands-on learning experiences.

- **Global Collaboration and Networking:** Encourage collaboration with educators, researchers, and institutions worldwide to share insights, resources, and best practices in integrating technology into mathematics education.

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