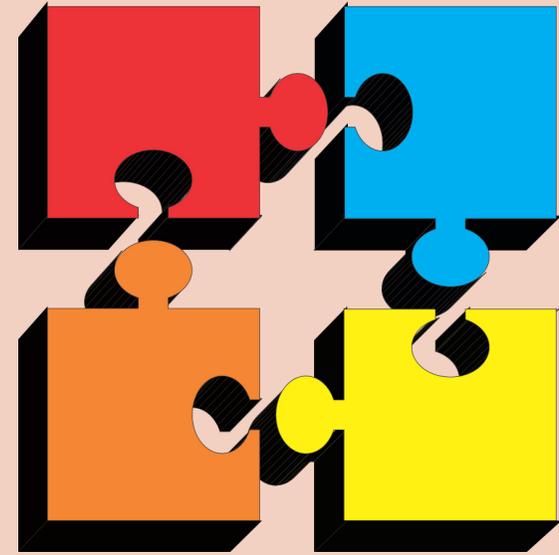


Bridging Theory and Practices for Educational Sciences



Editor
Prof. Dr. Abdülkadir KABADAYI

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FOREWORD

The theme of this year's book is *Bridging Theory and Practices for Educational Sciences* with many types of research now taking on global dimensions, it is imperative to discuss theory and practices in educational sciences including the best research integrity practices. I believe that this book could catalyze strengthening international cooperation on the transfer of innovative approaches towards education.

The challenges in educational sciences are both difficult and interesting. Academicians are working on them with enthusiasm, tenacity, and dedication to develop new methods of analysis and provide new solutions to keep up with the ever-changing world. In this new age of global interconnectivity and interdependence, it is necessary to provide security practitioners, both professionals, and students, with state-of-the-art knowledge on the frontiers in educational sciences. This book is a good step in that direction.

This volume contains 13 of the chapters that were presented to editorial boards. In keeping with the formatting of the book, the papers are published in English. This year's book received a considerable number of submissions investigating a wide variety of field in general education topics.

This book provides a valuable window on educational sciences and covers the necessary components from syllabus design to distance education. *Bridging Theory and Practices for Educational Sciences* addresses especially educators, researchers, academics, postgraduate students, pre-service teachers, teachers, and school leaders' development. It makes recommendations to educators, researchers, academics, postgraduate students, pre-service teachers, parents, teachers, school leaders, and policymakers, and so on.

The editor would like to thank all of the authors who made this book so interesting and enjoyable. Special thanks should also be extended to the reviewers who gave their time to evaluate the record number of submissions with tenacity and dedication. Especially to the LVRE DE LYON Publishing House, we owe a great debt as this book would not have been possible without their consent efforts.

At this juncture, I would like to thank the authors for all of their cooperation. We hope that all of those reading enjoy these chapters of the book as much as possible.

Editor

Prof. Dr. Abdülkadir KABADAYI

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CHAPTER 1

EXTERNAL QUALITY ASSURANCE IN THE EUROPEAN HIGHER EDUCATION AREA: COMPARISON OF TURKEY

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1. European Higher Education Area and The Bologna Process

The Bologna Process promotes intergovernmental cooperation in the field of higher education between 49 member states. It established the EHEA to construct higher education more accessible, inclusive, attractive, competitive and also to facilitate staff and student mobility (EC Education and Training, 2021). The Bologna Process was launched officially in 1999 with Bologna Declaration to create a European Higher Education Area (EHEA).

The Process has generated a capacity for dialogue and cooperation that reaches far beyond Europe (European Commission/EACEA/Eurydice, 2015). Turkey has been the member of Bologna Process/EHEA since 2001. Targets of the Process, like in the other member countries, provide appropriate tools to Turkey in terms of carrying higher education studies to the global dimension (YÖK, 2010).

Ministerial Conferences are organized every two or three years to assess the progress made within the EHEA and to decide on the new targets to be taken. Ministerial Declarations and Communiques are adopted at these conferences by Ministers responsible for higher education. Thus, Member States in the Bologna Process make commitment about higher education reforms in their countries.

2. Commitments on Quality Assurance in the EHEA Ministerial Declarations and Communiqués

Among the targets of the Bologna Process, quality assurance has a vital role. Quality Assurance is also mentioned in ministerial declarations and communiqués. Accordingly, one of the objectives of countries within the European Higher Education Area is to improve quality assurance in their higher education systems.

Commitments on quality assurance in the EHEA ministerial declarations and communiqués are as follows: One of the purposes of the Bologna Declaration is to promote European cooperation in quality assurance of higher education with the aim of flourishing comparable methodologies and criteria (Bologna Declaration, 1999). Prague Communiqué states that quality assurance systems play a vital role in facilitating comparability of qualifications and in ensuring high quality standards (Prague Communiqué, 2001). With Berlin Communiqué, Ministers in the EHEA commit that they will reinforce their efforts to promote effective quality assurance systems. Ministers emphasize that they will support further development of quality assurance at institutional, national and also European level. They underline that mutually shared criteria and methodologies on quality assurance need to be developed (Berlin Communiqué, 2003). Bergen Communiqué stresses that higher education institutions ought to continue their attempts to increase the quality of their activities. In addition, Ministers adopted standards and guidelines for quality assurance in the European Higher Education Area (Bergen Communiqué, 2005).

According to London Communiqué, because higher education institutions are mainly responsible for quality, they should develop continuously their systems of quality assurance. Ministers encourage international collaboration between quality assurance agencies and they recognize the progress made with respect to mutual recognition of accreditation and quality assurance decisions (London Communiqué, 2007). Bucharest Communiqué states that quality assurance is required to build trust and to strengthen attractiveness of EHEA's offerings (Bucharest Communiqué, 2012). In Yerevan Communiqué, the revised Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) was adopted. One of commitments of Ministers in the communiqué is to enable their HEIs to use an appropriate EQAR registered agency for their process of external quality assurance (Yerevan

Communique, 2015). Paris Communique emphasizes that quality assurance is crucial in developing mutual trust. It also enhances mobility, fair recognition of qualifications and study periods within the EHEA (Paris Communique, 2018). In Rome Communique, Ministers acknowledge the development in quality assurance systems aligned with ESG and they commit to removing remaining obstacles (Rome Communique, 2020).

Briefly, main issues regarding the quality assurance in the European Higher Education Area starting from the Bologna Declaration to nowadays are as follows: European cooperation in quality assurance is specified in the Bologna Declaration. With the Prague Communique, collaboration between QA and recognition professionals are underlined. Berlin Communique emphasizes the vital role of QA at institutional, national and European level. European Standards and Guidelines for quality assurance (ESG) was adopted in Bergen Communique. European Quality Assurance Register (EQAR) was created in the London Communique. According to the Leuven Louvain la Neuve Communique, quality is an overarching focus for the EHEA. In the Bucharest Communique, Ministers allow EQAR registered agencies to fulfil their activities within the EHEA. Revised ESG and European Approach to QA of joint programmes was adopted in the Yerevan Communique. Paris Communique underlines that compliance with ESG 2015 should be ensured and European Approach for QA of Joint programmes should be promoted (European Commission/ EACEA/ Eurydice, 2020, page 14). Therefore, quality assurance in the European Higher Education Area plays a vital role.

3. Some Researches About Quality Assurance in Turkey and External Quality Assurance

In Turkey, there are some studies at the national level regarding quality assurance. Karakaya (2017) specifies that their university was successful in Institutional Evaluation Programme by EUA in 2012 and external review process by Higher Education Council in 2016. The university participated these processes voluntarily. The researcher proposes that accreditation studies should be expanded in HEIs. Ayvaz et al. (2016) states that activity register within the scope of the quality assurance such as planning, implementing, reviewing, questioning, reporting, meeting, visiting, questionnaire and workshop should be maintained systematically. Keeping the records in e-environment is going

to provide great convenience and savings. Işık and Beykoz (2018) states that quality assurance in higher education is increasingly debated especially in developing countries. Quality assurance consists of internal/external audits and accreditation of institutions. Researchers conclude that quality understanding in Turkish higher education is on the development phase.

Ataman and Adıgüzel (2019) investigated perception of university students on quality in higher education. They found that students need to participate in decision making processes in universities and their ideas, demands and complaints should be taken into consideration. Koyuncuoğlu (2020) states that it will be correct to focus on the concept of quality-oriented education instead of the concept of education-oriented quality. In order to achieve this, higher education institutions are recommended to use pathways to enhance their internal motivation (awareness and motivation) instead of external motivation (imposed standards), which will bring benefits in the long run.

According to Uygur and Yelken (2019), currently, there are problems in teaching-learning processes in higher education. Most of these problems stem from qualifications of teaching staff towards teaching-learning processes. Therefore, a training program consisting of current topics and contents should be developed and implemented to improve instructors' teaching-learning process competencies. Özdağoğlu et al. (2020) examined research articles about "quality in higher education" with scientometrics. According to first findings, there is an increase in the number of research articles about quality studies in higher education. Top 20 countries contributing most to the literature were emphasized. USA is the first while Sweden is in the 20th row. Turkey is in the seventh place with 40 studies and 371 citations. These statistics are not sufficient for Turkey because there is a lot of higher education institutions and researchers in the country.

Uygur (2018) states that instructors in universities have educational needs such as student-centered course design, use of information technologies in education, measurement-evaluation, learning-teaching theories and approaches, and new approaches in classroom management. Kılıçaslan (2020) mentions that one of the most important outcomes of the accreditation is to contribute the prestige of higher education institutions by recognizing the university and the programme both in the country and outside country. Accreditation, as a result, should be evaluated as a system that ensures quality in higher education. Soyer (2019) specifies that Higher Education Quality Council is the institution

in charge of external evaluation of higher education institutions in Turkey and the Council has a guiding role by providing feedback to the institutions. Researcher compared the universities in Thrace region in the study and found that universities defined the processes, however their efforts on monitoring and improvement were insufficient.

Şimşek et al. (2019) states that since 2015 measuring student satisfaction in higher education has become a vital data source for quality assessment and strategic planning. Universities will be able to determine their strengths and weaknesses and gain crucial data for service quality enhancement activities by measuring student satisfaction. The researcher's object in the study is to develop a scale which measures university students' satisfaction levels in valid and reliable manner. Results show that the scores of the developed scale have a high degree of reliability. It has been observed that the developed scale is a valid and reliable scale that can be used especially for universities conducting satisfaction studies. Derdiyok (2019) suggested a model in the study to assist higher education institutions systematically realize and develop their strategic plans and targets, and thus found and spread quality assurance system. The model is called "Plan Do Check and Act (PDCA) management cycle model".

Hamutoğlu et al. (2020) revealed key points in quality processes of higher education by comparing the quality processes implemented by Australia, Germany, Ireland, Norway and Switzerland with those of Turkey. According to findings, countries exist in quality processes for some reasons such as presenting deficiencies in higher education, clarifying the relationship between program outcomes and instructional process, providing continuous improvements, being accountable and transparent, being compatible with ECTS, and being consistence at the national level. Equivalency and budgeting issues are also important.

On the other hand, external quality assurance has an important role in the quality assurance standards. Quality assurance standards are divided into three parts. These are internal quality assurance, external quality assurance and quality assurance agencies. They are all naturally interlinked and they make basis for a European quality assurance framework. The processes of external quality assurance should be useful, implemented consistently, reliable, pre-defined and published (ESG, 2015). External quality assurance is process of audit or evaluation of a higher education institution or programme undertaken by a body outside institution (European Commission/ EACEA/ Eurydice, 2018, page 283).

4. Results and Recommendations

The aim of the research is to reveal dimensions of External Quality Assurance in the European Higher Education Area and to determine implementations in Turkey by considering Bologna Process Implementation Reports 2018 and 2020. Accordingly, the final aim was to find aspects open to development in external quality assurance practices of Turkey.

Data was obtained from European Higher Education Area: Bologna Process Implementation Reports published in Ministerial Conferences and analyzed. On the other hand, ministerial declarations and communiques were also analyzed in order to achieve findings. Consequently, main items and practices about external quality assurance in the EHEA were obtained.

Turkey's implementations regarding external quality assurance in higher education are explained below comparatively by considering recent Bologna Process Implementation Reports. Four main headings were analyzed under the external quality assurance in higher education: stage of development of external quality assurance system; level of student participation in external quality assurance system; level of international participation in external quality assurance; and monitoring the implementation of the ECTS system by external quality assurance.

4.1. Stage of Development of External Quality Assurance System

Both 2018 and 2020 Bologna Process Implementation Reports show that a quality assurance system is in operation in Turkey, however the system has not been fully aligned to the ESG. 2018 Report indicates that Slovakia, Czechia, Ukraine, Georgia and Albania are also in the same category with Turkey. In other words, quality assurance system in these countries has undergone no external evaluation in order to ensure compliance with ESG. 2020 Report shows that Turkey, Ukraine, Czechia and Albania has still been in the same category.

The general criteria under this heading is as follows: there is a fully functioning quality assurance system in the country. In other words, all HEIs are subject to regular external quality assurance by an agency. This agency should demonstrate its compliance with ESG through registration on EQAR. 30 higher education systems in the European Higher Education Area meets this general criteria by considering 2020 Report whereas 24 higher education systems in the European Higher Education Area meets this general criteria by considering

2018 Report. Some of these countries according to the recent 2020 report are Bulgaria, Romania, Georgia, Finland, Norway, United Kingdom, Spain, Germany and Portugal.

An important issue is that registration of EQAR is a major aspect under this heading. Although Turkish Higher Education Quality Council (THEQC) was founded on July 2015 and the Council has been doing outstanding works and regulations in terms of strengthening quality assurance system in the field of higher education in Turkey, stage of development of external quality assurance system is still the same in the 2020 Report compared to the 2018 Report. THEQC has been the member of ENQA since 2020 and when The Council realizes EQAR membership and the higher education system been fully aligned to the ESG, then external quality assurance system will improve remarkably.

4.2. Level of Student Participation in External Quality Assurance System

When compared 2020 Bologna Process Implementation Report with the 2018 Report in terms of Turkey, it is monitored a significant progress in the level of student participation in external quality assurance system. 2018 Report indicates that Russian Federation, Latvia, Serbia, Austria are also in the same category with Turkey. 2018 Bologna Process Implementation report shows that students participate as full members in some of quality assurance reviews. On the other hand, 2020 Report shows that Turkey's situation is the same with countries such as Kazakhstan, Finland, Poland and Austria. It is clear from the reports that Turkey and Austria made progress in 2020. In other words, students participate most of the quality assurance reviews in Turkey by taking into account of 2020 Bologna Process Implementation Report. The foundation of THEQC in Turkey led to improvement in the level of student participation in external quality assurance system.

There are five criteria under this heading. Students' participation as full member is crucial. They are expected to participate in external review teams; in national quality assurance agencies' governance structures; in self-evaluation reports' preparation; in follow-up procedures; in decision making process for external reviews. 20 higher education systems in the European Higher Education Area meet these five criteria. Some of these countries are Sweden, Norway, Ukraine, Italy, France, United Kingdom, Ireland and Romania in the recent 2020 report. Student participation in higher education governance is among fundamental values of the Bologna Process. Students need to engage actively in

learning process. Therefore, there is still improvement to be made in more than half of countries of the European Higher Education Area in order to meet the commitment of Bologna Process to full student engagement.

4.3. Level of International Participation in External Quality Assurance

According to 2020 Bologna Process Implementation report, when compared with the year 2018, Turkey progressed in terms of international participation level in external quality assurance. 2018 Report indicates that Bosnia and Herzegovina, United Kingdom, and Turkey are in the same category. On the other hand, 2020 Report shows that Turkey's situation is the same with countries such as Georgia, Armenia, Latvia, Lithuania, Bulgaria, Romania, Serbia, Poland and Portugal. The foundation of THEQC in Turkey led to improvement in the level of international participation in external quality assurance. In Turkey, there is endeavor constantly to place internationalization obligations in national quality assurance systems.

There are four criteria under this heading: agencies are ENQA's members or affiliates; international experts/peers participate in national quality assurance bodies' governance; international experts/peers participate as observers/members in evaluation teams; international experts/peers take part in follow-up procedures. 24 higher education systems in the European Higher Education Area meet these four criteria by considering 2020 Report while 15 higher education systems in the European Higher Education Area meet these criteria by considering 2018 Report. Some of these countries in the recent 2020 Report are Russian Federation, Finland, Sweden, Norway, Italy, France, Spain and Germany. It is clear that internationalization in quality assurance is growing significantly.

4.4. Monitoring the Implementation of the ECTS System by External Quality Assurance

The criteria under this heading is that principles of ECTS Users' Guide 2015 are required to be used by external quality assurance as a basis to evaluate ECTS implementation in all HEIs. The monitored issues are as follows: ECTS credit allocation is on basis of student workload and learning outcomes; it is monitored regularly and if necessary followed up by appropriate revision. ECTS is used as a credit system for transfer and accumulation of credits. HEIs have appropriate appeals procedure to cope with credit recognition problems. According to both

2018 and 2020 Reports, Turkey meets this criteria. On the other hand, 25 higher education systems including Turkey in the European Higher Education Area meet the criteria by considering 2020 Report whereas 16 higher education systems including Turkey in the European Higher Education Area meet these criteria by considering 2018 Report. Some of countries meeting the criteria in the recent 2020 Report are Russian Federation, Bulgaria, Romania, Norway, Italy, France, Germany, Spain and Portugal as well as Turkey. That is to say, higher education systems in these countries require external quality assurance agencies to monitor each key aspects of ECTS implementation during their systematic evaluation processes.

Consequently, in Turkey, levels of student participation and international participation in external quality assurance system have improved significantly. With the foundation of THEQC, external quality assurance as well as quality assurance in Turkish higher education has progressed. In addition, monitoring the implementation of the ECTS system by external quality assurance is in a constructive level. On the other hand, external quality assurance system should further be developed.

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CHAPTER 2

THEORETICAL APPROACHES TO CYBERBULLYING

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1. INTRODUCTION

With the spread of technology and increased accessibility, bullying has been moved to electronic media in bullying. The importance of cyberbullying, which came to the fore in the 2000s, has continued to increase in the past twenty years. When the literature is examined, it is possible to come across many definitions of the concept of cyberbullying. Smith et.al. (2008) cyberbullying as the violent behavior of the individual or the community to harm technology, Palermi et.al. (2017) people who do not have the chance to protect themselves, are defined as being harmed by electronic means. In another definition, cyberbullying is a continuous and conscious slander, gossip, harassment, threat, embarrassment, etc. that is carried out in an electronic environment (via e-mail, SMS, instant messaging, chat rooms, blogs, forums and social networks) for individuals or groups expressed as disturbing actions (Patchin & Hinduja, 2006). In brief, the concept of cyberbullying, can be defined as an immoral behavior that occurs electronically, which includes the bully and the victim, has certain effects for both parties, outside of physical environments.

Studies showing that cyberbullying can cause physiological problems such as self-esteem problems, sleep problems, depression, suicidal ideation, attention deficit and hyperactivity disorder. We can see some examples in the literature (Reed, Cooper, Nugent & Russell, 2016; Tural-Hesapçiođlu & Ercan, 2017; Kowalski, Limber & Agatston, 2012; Hinduja & Patchin; 2010; Heiman, Olenik-Schemes & Eden, 2015). However, it has been found in researches that

cyberbullying is associated with low academic achievement and many school-related problems (Kowalski & Limber, 2007; Wang, Nansel & Iannotti, 2011).

It is stated in the researches that cyberbullying behavior is observed in all age ranges starting from primary school level to university level. In the study conducted by Arslan, Savaser, Hallett, and Balci (2012) the rate of the cyber bully at the primary school level is 18%, the cyber bully rate is 31.5% in the study done by Buelga, Cava, Musitu and Torralba (2015) at secondary school level, the cyber bully rate is 35% in the study conducted by Roberto, Eden, Savage, Ramos-Salazar, Deiss, (2014) at high school level. and Erdur-Baker (2019) determined the rate of cyberbully as 3% in their study at the university level. It can be seen from the research, cyberbullying can affect all age groups who can use electronic communication tools, not a certain age group. If we look at the prevalence and effects of cyberbullying, the size and importance of the problem is an indisputable fact.

The importance of theories is obvious in terms of understanding and evaluating the causes of behavior. Theories play an important role in generating precautionary and intervention programs as well as generating questions for researchers in terms of behavior, in addition to the benefit of determining the cause. When cyberbullying researches are examined, a limited number of studies explaining cyberbullying theories stand out Slonje, Smith and Frisen (2012) stated that the concept of cyberbullying lacks a theoretical basis. It is stated by Barlett (2017) that theoretical, aggressive, or behavioral-based theories that are not theoretically directed towards explaining cyberbullying are insufficient to explain cyberbullying. In this review, some of the theories used in cyberbullying researches are created for direct cyberbullying, some are based on aggression and behavior, or general psychology theories are tried to be explained in detail.

2. CYBERBULLYING THEORIES

2.1. *The Precaution Adoption Process Model*

The Precaution Adoption Process Model was developed by Weinstein (1988). In the model, he said that the individual's adoption and action took five stages. Later, the number of stages of the theory revised by Weinstein and Sandman (1992) was increased to seven. These are: (1) Being aware of the health problem, (2) Being aware of the problem but not giving importance, (3) Starting to give

importance to the problem and deciding what to do, (4) Deciding not to act, (5) Deciding to act, (6) to act, (7) to continue the behavior (Weinsteins & Sandman, 2002). Another important concept put forward by Weinstein is the optimism bias. Optimism prejudice is the belief that people have an optimistic prejudice about their risks, meaning that people are untouchable (Weinstein, 1989, 1980).

The Precaution Adoption Process Model was first tested by Chapin (2016) for cyberbullying behavior. Research conducted on 1488 adolescents found that most adolescents are aware of cyberbullying and cyberbullying is seen as a problem. In addition, it was determined that half of the adolescents were stuck in the second stage and no students were in the fifth stage. The other important results of the study were found in direct proportion to the optimism bias and the age factor, to use Facebook and to have an inverse relationship with the optimism bias. Another important result of the research is that optimistic bias decreases as the model progresses (Chapin, 2016).

2.2. Barlett and Gentile Cyberbullying Model

Barlett and Gentile Cyberbullying Model (BGCM; Barlett & Gentile, 2012) is a new theory that explains the psychological mechanisms to predict cyberbullying. Although BCGM is defined as a learning-based model, it is the only theory that has been developed specifically for cyberbullying and separates traditional bullying and cyberbullying precisely. The theory was created by influencing General Aggression (Anderson and Bushman, 2002) and General Learning Theories (Gentile et al., 2009). General Aggression and General Learning Theories emphasize that the continuation of positively reinforced learning with the same or similar stimuli eventually promoting the development of various learning outcomes. Such learned results will become automatic and easily acceptable to help to shape one's personality (Barlett 2017).

BGCM has four propositions. The first is to develop the ability and self-efficacy to practice cyberbullying behavior from several early learning trials. When a person attacks another person using technology, these attacks are counted as an attempt to learn, and in these attempts: (1)the attacker is likely to be the anonymous perception of the victim, (2) the physical difference between the victim and the attacker is meaningless, (3) the victim of the non-physical cyber-attack not leaving it on (wound, bruise, etc.), (4). Failure to see the attacker's impact on the victim directly and (5) difficulty to recognize and punish the attacker by the authorities or their parents will facilitate harm. When

every cyberattack is internalized as a learning experiment, after several cyber attacks, the attacker will automate this situation and make this behavior ready for future use (Barlett, 2017).

The second proposition of BGCM is that after the behavior is automated and made ready for use, positive attitudes towards cyberbullying occur. The important points of this proposition are perceived anonymity, belief in the irrelevance of masculinity in online bullying (BI-MOB), relationships between cyberbullying attitudes and cyberbullying. It is stated that these points reinforce cyberbullying and display a positive attitude (Barlett, 2017; Barlett, Prot, Gentile & Anderson, 2017; Smith et. al, 2008). The third proposition of the theory is that after cyberbullying attitudes have successfully become part of the personality, these attitudes predict behavior. Studies related to cyberbullying are enough to support this (Barlett, 2017; Barlett, Gentile & Chew, 2016; Barlett, Gentile, Anderson, Suzuki, Sakamoto, Kumazaki & Katsura, 2014).

The fourth and final proposition is implicitly included in the model. BCGM gradually explained cyberbullying against traditional bullying, and although the similarity between both bullyings was high, the correlation between positive cyberbullying attitudes and behavior was found to be significantly higher than the correlation between cyberbullying and traditional bullying, and the propositions stated in the model played a more distinctive role in defining bullying (Barlett, 2017).

2.3. The Cyclic Process Model

The Cyclic Process Model aims to solve basic processes between bullying (online or offline) and cyberbullying. There are two processes in the Cyclic Process Model. These are (1) Anger and disappointment after victimization, (2) Exposure to media with antisocial and risky behavior content. The Cyclic Process Model will try to solve these emotions by turning them into media with antisocial and risk behavior content that will either stimulate or reduce the cyberbullying threshold, after the victim's anger or frustration (Den Hamer & Konjin, 2016).

The validity of the Cyclic Process Model has been tested in several studies with approximately 2,000 adolescents. The Cyclic Process Model has found empirical support through both cross-sectional and longitudinal studies. In the research, it was found that the relationship between victimization and cyberbullying was accompanied by experiencing anger and frustrations, and

exposure to media with antisocial and risky behavior content. The research also found that exposure to risky behavior content increased cyberbullying behaviour (Den Hamer & Konjin 2016). Fanti et.al. (2012) In a study conducted with 1400 adolescents, it was found that exposure to violent media affects cyberbullying (Fanti, Demetriou &Hawa, 2012). Similar to model results, Ak et al. (2015) revealed the mediating role of anger between bullying and cyberbullying.

2.4. The Theory of Reasoned Action and the Theory of Planned Behavior

This theory is a theory that reveals individual reasons for performing health behaviors. The Theory of Reasoned Action, which was put forward by Ajzen and Fishbein (1975) and used to explain the behaviors that individuals can control hundred percent, is the concept of ‘‘perceived behavior control’’ added to The Theory of Reasoned Action as a result of the idea that time and behavior may not always be in the hands of the person. and The Theory of Planned Behavior was created by Ajzen (1991) (Bulduk, Yurt, Dinçer &Arđıç, 2015; Ajzen, 2012; Wang & Zhang, 2016). In short, in the Theory of Reasoned Action, behavior is said to be completely voluntary, whereas, in the Theory of Planned Behavior, behavior is said to have both voluntary and involuntary aspects (Yazdanpanah & Forouzani, 2015).

The effect on behavior emerges with the intention of behavior. Behavioral intent can be defined as the person’s desire for behavior and the effort he/she makes to perform the behavior. Attitude towards behavior, subjective norms and perceived behavioral control have an important role in the formation of behavioral intent. While the attitude towards behavior is defined the behavior as positive or negative according to the evaluation of the person, the subjective norm can be defined as a social pressure against the behavior whether is performed or not. Perceived behavioral control is defined as the difficulty or ease that people perceive against performing the behavior (Schifter & Ajzen, 1985; Ajzen, 1991). There is a direct proportion between the magnitude of the intention towards behavior and the probability of the behavior taking place. In addition, perceived behavioral support increases the intention to realize the behavior and naturally affects the behavior (Ajzen, 2006a).

According to the Theory of Planned Behavioral, expected results of behavior, behavioral beliefs, behavior expectations perceived by individuals such as individuals’ family, friends, spouse or others constitute normative beliefs. Finally, the perception of factors that will facilitate or prevent the performance

of the behavior constitutes the control beliefs and these belief parts also affect human behavior (Ajzen, 2002a; Ajzen, 2002b; Ajzen, 2006a; Ajzen, 2006b).

The theoretical framework Constantine, Curry, Diaz and Huh-Kim's (2000) "Theory of Reasoned Action" has formed the basis for bullying and cyberbullying. Five structures are mentioned in the framework. These are beliefs and attitudes, perceived home and school environment, perceived self-efficacy, behavioral intent and behavior. It is stated that these structures are interrelated and affect students' behavior and actions related to cyberbullying namely they have an important role in explaining cyberbullying behavior. Therefore, students who are victims of cyberbullying, do cyberbully or witness cyberbullying and their beliefs and thoughts about cyberbullying, their perceptions about home and school environment affected the behaviors during and after cyberbullying. In addition, Doane, Pearson and Kelly (2014) have adopted the Theory of Reasoned Action to cyberbullying and found that positive attitudes towards cyberbullying, empathy towards cyber victims, and norms involving cyberbullying measures affect people's intention to harm others online.

2.5. A General Theory of Crime

In the theory put forward by Gottfredson and Hirschi (1990), guilt was explained by situational conditions, low self-esteem and individual characteristics. The theory explains guilt largely with low self-esteem and has shown the family institution and socialization methods as factors in the formation of low self-esteem. In addition, in theory, people with low control levels are said to be more prone to crime and antisocial behavior and to be lacking the capacity to manage their behaviour (Gottfredson & Hirschi, 1990).

In the literature review, it was found that there is a direct proportion between low self-control levels and cyberbullying, that is, individuals with low self-control levels are more prone to show cyberbullying behaviour (Marcum, Higgins, Freiburger ve Ricketts, 2014; Lianos & McGrath 2017).

2.6. The Social-Ecological Theory

No being in the world is alone. Each entity interacts with its environment and its creatures. It occurs as a result of complex interactions between the individual's contexts (Espelage et. al. 2012). Therefore, if we want to examine cyberbullying realistically, we need to consider the individual's interaction with his/her environment and interactions. In this context, the most well-known model is Urie Bronfenbrenner's Ecological System Theory (Bronfenbrenner, 1979).

In the Bronfenbrenner Theory, she emphasized that ecological contexts are both affected by the personality of the individual and affect the personality of the individual. The theory was developed to conceptualize the interaction of the individual and the environment, and five different systems were mentioned in the model that directly or indirectly affects individual behavior. These systems are microsystems, mesosystems, ecosystems, macrosystems and chronosystems, respectively. Microsystems include the individuals that the individual interacts with and their relationships with them. Mezosystems; consist of the relationships between microsystems (Bronfenbrenner 1986). For example, the ecosystem includes relationships such as family and peers, family and school management. Ekzosystem; on the other hand, is a whole of interactions that affect the individual through people who are not in direct contact but are in indirect contact in the microsystem (Bronfenbrenner & Ceci, 1994). Examples of the ekzosystem are the professions of the parents or the jobs they work (job stress, working hours, job stress, etc.). It includes the cultural values, belief systems, lifestyles, laws, social and economic conditions of the society in which the person lives (Bronfenbrenner & Ceci, 1994). Although macrosystems do not directly affect the individual, they affect the individual indirectly as it affects factors such as the social and economic environment of the individual. The system that contains the last and all systems is the chronosystem. It is the system that expresses how and to what extent the changes over time affect the individual. It includes normative and non-normative changes. Normative changes are examples of siblings, starting school, and non-normative situations such as parental divorces and child abuse (Bronfenbrenner 1986).

Cross et al. (2015) Based on Bronfenbrenner's model, he created a new social-ecological model for cyberbullying. In this model, considering the relationship between the individual and technology, five levels affecting cyberbullying behavior are mentioned and evidence is presented. The levels affecting cyberbullying include individual, family, friend, online environment and social environment levels. Also, in the study, five interactive ways of using the online environment are explained, emphasizing that the use of the online environment is complex and varied. These are the online context (Instagram, chat rooms, etc.), online contacts (social relationships), the extent to which privacy is managed, the individual's online behavior, including online technical skills and self-control, and the online content that the individual uploads, use, and accesses.

Wright (2016) adapted the social-ecological theory to cyberbullying and evaluated the ecological systems in Bronfenbrenner's theory in the formation of cyberbullying. In the innermost ring, there are personal characteristics (age, gender, empathy, being involved in traditional bullying, etc.). Microsystems; Parenting styles include factors such as poor family relationships, school management and teachers' attitudes towards cyberbullying, low school engagement, peer loyalty, and cyberbullying attitudes among peers. The mesosystem is the unemployment of the parents, the family environment, the school, etc. Ekzosystems all media, rules and policies, macrosystem; it includes the cultural structure to which the individual belongs. The last system, chronosystem, includes access to technology, use of technology, and online disinhibition.

2.7. General Strain Theory

General Strain Theory was first introduced by Merton in 1938. Robert Agnew revised the theory in 1985, arguing that the situation that led the person to crime was not only to reach the positive goal and that the person's inability to legally escape from painful or disturbing situations also affected the guilt (Agnew, 1985). Robert Agnew emphasized that the three general strain types cause certain emotions (anger, frustration, etc.) and these tension situations together with the negative environment cause criminal behavior. These types of strain are (1) Density of negative stimuli (eg verbal or physical abuse), (2) Insufficient achievement of favorably targeted goals (eg Prestige, money), (3) Lack of positive stimuli (eg job loss, romantic loss of partner) (Agnew, 1992).

In their study, Lianos and McGrath (2018) investigated the relationship between anger emotion strain and cyberbullying, and determined that tension affects cyberbullying behavior and anger may accompany this relationship. When the literature is examined, studies are examining the relationship between General Strain Theory and cyberbullying and stating that strain and cyberbullying are related (Jang et. al., 2014; Keith, 2017; Paez, 2016).

2.8. Social Information Processing Model

The Social Information Processing Model was first proposed by Dodge (1986) and later revised by Crick and Dodge (1994). According to the model, it is aimed to define the social cognitive processes underlying the behavioral responses of children in social situations and based on various social cognitive processes.

Social information processing refers to mental processes that involve one's perceptions of other individuals in society and their reactions to them. The model provides us a structure that explains how people interpret and evaluate the process in a social situation and how they make a decision in this direction. It is argued that how a person perceives and interprets the social situation affects the behavior of the person. The model also explains the relationship of social cognition with social cohesion and aggression, but it centers on the principle that social information processing approaches, social cognitions lead to observable behaviors and how this is evaluated by other individuals (Crick & Dodge, 1994; Dodge et. al., 1986). According to Crick and Dodge (1994), individuals respond to social situations with their biological capacities and past experiences and memory of social information. In summary, our mental structures with others and ourselves are shaped by our past experiences. These structures can act as a filter in the interpretation of social situations and affect our behavior (Keil & Price, 2009).

According to the model, Crick and Dodge (1994) say that people use a six-digit information processing directory before evaluating a social situation or exhibiting behavior. These are; (1) Coding of internal and external clues, (2) Interpretation of clues, (3) Explaining goals / Setting goals, (4) Responding to response and reacting, (5) Deciding on response and (6) Reacting. The model also says that aggressive people have qualification errors, their descriptive levels are insufficient, and their social problem-solving skills are limited. In short, it is emphasized that people have coding errors (Crick & Dodge, 1994).

Runions et al. (2013) thought that the Social Information Processing Model could be adapted for cyberbully-victim situations and reconsidered the model with some features of information and communication technologies. Social clues, tone of voice, facial expressions and social situations present in traditional face-to-face interactions give an idea to the individual about the intention of the other person. In addition, when looking at some concepts in the Social Information Processing Model in terms of information, communication technologies and cyberbullying, most of such clues are missing (eg non-verbal and intonation tips; Tokunaga, 2010). In some cases, the person has such insufficient information that he/she may not even know the identity of the other person. For this reason, researchers argue that anonymity may be among the causes of aggressive behavior (Kowalski & Limber, 2007; Crick & Dodge, 1994). In another aspect, the persistence of the event in traditional bullying is

usually temporary, but cyberbullying occurring on social networking sites open to many. The event between the people can be easily distributed and the victim who is the victim of the event's online status can be exposed to this situation continuously (Dodge & Frame, 1982; Runions et al. 2013).

Regarding the step of interpreting the clues, which is the second step of the Social Information Processing Model, the following can be said: Unlike traditional face-to-face bullying in cyberbullying, the presence of tone or non-verbal cues can increase misunderstandings and make different loadings on one's intent. It can be said that some visual expressions, ie emojis or acronyms (eg Lol. Laugh out loud) lead to uncertainties. Expressions and abbreviations can increase message ambiguity by introducing new mockery. However, as a result of the situations arising from the uncertainty of information communication technologies, the problem arises whether the event is a joke or not (Derks, Bos, & Grumbkow, 2007; Runions et al. 2013). Perceptual change of expressions and abbreviations from person to person increases the uncertainty in the online environment, but it will make it difficult to understand whether the event is a joke or a crime.

The Social Information Processing Model is seen as a motivation that there is a feedback loop between coding and interpretation, which in the process of determining the meaning of social action, pushes the person to control ambiguous comments against their original clues. Persistence brings with it rumination, which can result in hostile and / or depressive rumination. The absence of traditional face-to-face communication structures in cyberbullying will force the person to answer the question "What did he mean?", To make an inquiry and to add his comment. As a result of this situation, the person will react (Crick & Dodge, 1994; Runions et al., 2013). After the clues are coded and interpreted in the Social Information Processing Model, the results begin to be evaluated. During this evaluation, the person also takes into consideration the thoughts of the peer group because peer acceptance and belonging are important for the person in this period and decisions are made accordingly (Ojanen, Grönroos & Salmivalli, 2005; Waldinger et al., 2002; Crick & Dodge, 1994). Another aspect of social purposes is that information and communication technologies contain factors that support and facilitate cyberbullying. Examples include anonymity and the size of the group reached (Runions et al. 2013).

The last step of the Social Information Processing Model is the part where individuals evaluate potential responses against a social event and prioritize final response choices taking into account the potential outcome planned. It is

stated that information communication technologies offer a risky context for aggression. These technologies have features such as providing peer approval or having few risks for bullies (Runions et al., 2013).

2.9. General Aggression Theory

This theory draws attention to the relationship between the environment and individuals, considering both innate characteristics and the need for learning in aggression. Anderson et al. (1995), “Affective Aggression Model” developed by Anderson and Bushman (2002), there is a harmonious integration of small theories about aggression.

Anderson and Bushman (2002) focused mainly on cognitive information structures and three points in the model. These include (1) person and status inputs (2) cognitive, emotional, and arousal impacts influenced by input variables (3) basic assessment and decision processes, ie outputs. The properties of information structures are mentioned in the model. Information structures: They emerge from experiences, affect perception at different levels, automate as they are used, include or are affected by emotional states, behavioral programs, and beliefs. It guides people to make sense of their environment and react to their environment (Anderson and Bushman, 2002). The three focuses in the model can be summarized as biological, environmental, psychological and social patterns that can affect aggression in inputs. Paths are defined as cognition, emotion and stimulation. Contexts between input and output. For example, watching movies that include hostility and violence constantly affect aggressive thoughts, emotions and behaviors. Here are the hostile and violent scenes referred to as roads. Finally, the outputs determine the final action of the phase with rapid assessment and reevaluation processes (Anderson & Bushman, 2002).

In cyberbullying, the parties have various information structures. In particular, victims, bullies and spectators are involved in cyberbullying, with past experiences, attitudes, desires, personality traits and motives that will determine the course of interaction. These information structures define the individual input variable of the personality and determine the situations in which the person is. Information structures in General Aggression Theory are the main basis of inputs. Initially, General Aggression Theory focuses on the individual and the situation-related factors affecting aggressive behavior. Individual factor; It includes age, gender, motives, personal characteristics, psychological state, socio-economic status and technology use, values, perceptions, and other

disharmonious behavior. Situational factors are provocation environmental characteristics, parental relationships, school environment and perceived anonymity (Kowalski, Giumetti, Schroeder and Lattanner, 2014).

Personal and situational inputs affect social, cognitive, emotional and behavioral outcomes in three routes in the General Aggression Model. These are cognition, affection, and behavior. Unlike the other model, in the cyberbullying model, these three routes appear immediately after a person encounters cyberbullying. This is introduced as an intermediate step because the internal states of victims of cyberbullying will not be effected until the event of cyberbullying occurs, as both personal and situational factors can increase the individual's tendency to become victims. In both the cyberbullying model and the cyberbullying exposure model, the person goes into the evaluation and decision making process after personal and situational inputs and internal situations. This process is called close processes in the model and differs from depressive symptoms, anxiety and behavior problems, which are distant outcomes. Whether impulsive reactions or planned behaviors, they all affect behavior decisions. Distant outcomes in the General Aggression Model show the psychological, social, physical and behavioral outcomes that or cyberbullying can encounter in the long run (Kowalski, Giumetti, Schroeder and Lattanner, 2014).

2.10. Choice Theory

The Theory of Choice argued that human behavior is not caused by external forces, but by choices made by the individual for purpose. In theory, it is said that external factors are effective in the decisions of the person, but the individual chooses how to behave in the face of these external factors, is responsible for his behavior because he can control the environment and himself, and he should take control of his life. It was emphasized that the individual should control his behavior for his success and happiness (Glasser, 2000; Glasser, 1998). In Glasser (1998) theory, he mentioned the five basic needs which have an important role in determining the individual's choices. These; survival is belonging (love-loving-loyalty), power, freedom and fun. These needs are said to be interrelated and that any change can affect others (Glasser, 1998).

Glasser introduced not only the theory but also Reality Therapy by including the practical operation of the theory. Reality Therapy aims to help individuals to make more effective choices to develop satisfying and healthy relationships with others with whom they interact (Glasser, 1999). According

to reality therapy, the individual stores the highest quality images of people, objects or events that start to feel good after birth, in a special area of the brain called the world of quality. The world of quality is based on the needs of the individual and the utopian world that the individual wants to live in (Corey, 2015; Seligman, 2006).

According to Glasser (1998), all areas of functionality are related to behavior and although individuals can only control their behavior, “Total Behavior” has been defined as thoughts, actions, emotions and physiology (Glasser, 2000; Glasser, 1998). In addition, two types of personality are mentioned in the theory. These are successful and unsuccessful identities. People who develop successful identities are people who tend to take responsibility, accept the truth as they are and act in this direction and can meet their basic needs effectively. Individuals who have failed identities have the opposite features and cannot meet their needs effectively. In order to meet their needs, they may behave illegally, reject community rules or believe in self-harm (Seligman, 2006).

Tanrikulu (2014) explained the cyberbullying behavior with basic needs in Choice Theory. When individuals cannot satisfy their belonging, power and entertainment needs, they are said to be able to turn towards cyberbullying in order to meet one or more of these needs. Another reason for cyberbullying is the context between cyberbullying and the need for power in one’s quality world. In addition, it is said that people who develop an unsuccessful identity and cannot take responsibility for their behavior can participate in cyberbullying behavior, and negative feelings, physiological problems and cognitive distortions experienced by individuals contribute to the formation of cyberbullying behavior (Tanrikulu, 2014). Tanrikulu (2015) investigated the extent to which one’s needs affect cyberbullying and concluded that power and belonging needs are effective in cyberbullying behavior (Tanrikulu, 2015).

2.11. Routine Activities Theory

Routine Activities Theory is another theory used to explain cyberbullying behavior. The routine activities theory (RAT) focuses its attention on the exit logic on the results of individuals’ behaviors, the facts in the decision mechanism before the behavior (Caliskan and Poyraz, 2020). Cohen and Felson (1979) thought that instead of investigating the characteristics of the criminal, it is necessary to focus on the temporal and spatial situations of the crime. They pointed out at this point that crimes may increase in parallel with the increase

in the daily activities of individuals and the time spent separately from the home, and this may create an opportunity to commit a crime. In theory, the three elements that constitute the crime factor are mentioned, taking into account the factors surrounding the person, the variable structure of the person and human life. These three parts, expressed as (a) motivated criminal, (b) appropriate target, and (c) lack of protector, were considered as sheet metal feet in the occurrence of the crime. The lack of one of the factors motivated to commit the crime, the absence of someone who can protect what is the appropriate target and the target or anyone prevents the crime. With this theory, the change of the activities of the individual in space and time is emphasized and the importance of the control mechanisms and the protective factor preventing crime formation. Therefore, as a result of the routine activities of people, the decrease in the effects of control mechanisms or control mechanisms on the individual will increase the probability of being a victim of crime (Cohen and Felson, 1979).

Lifestyle affects the probability of being a victim. It is said that the time spent in the dangerous areas where the individual is more likely to be exposed to the risk of bullying naturally increases the victimization. Exposure is mostly affected by routine activities. From this point of view, besides the innovative and social interaction triggering structure of the internet, it is a space for activities such as meeting new individuals, doing research, sharing photos/videos, playing games, In other words, it reveals that the internet is more than just a communication tool and the internet is a social activity area for individuals. While young people use the internet for their daily routine activities, considering the differences in online activity areas, the internet can encourage young people to cyberbullying and cause victimization (Rothfuss-Buerkel, Buerkel, 2001; Mesch, 2009). In a study consistent with the Routine Activity Theory, Marcum (2008) found that the time spent communicating with others increases the sharing of personal information online and cyber victimization. Likewise, in a study by Mesch (2009), it has been revealed that having an active social network profile increases the probability of cyber victimization.

2.12. Social Cognitive Theory and Moral Disengagement

Albert Bandura (1977a) created the Social Learning Theory based on the fact that people can learn by observing and drawing other people. Later, Bandura revised his theory as Social Cognitive Theory in 1986 considering the importance of cognitive process in learning. According to this theory, he argued that cognitive

behaviors are shaped not only by the person's internal psychology but also by the social environment. Bandura evaluated the concepts of social learning previously introduced in a social environment and said that the most important learning can occur by observing others (Bandura, 1977a, 1986, Gözüm & Bağ, 2010). The theory is based on six principles. These are (1) Mutual Determinism: It is the mutual influence of individual factors, individual behavior and environment and determining the individual's next behavior. Environmental behavior can be both a cause and a consequence (Bandura, 1989). (2) Symbolization: It is the learning of behavior as a result of symbolizing the events that people experience. (3) Predictive Capacity: It is people's predictions for the future by coding their lives in their minds. In short, the thought occurs before behavior (Bandura, 2001). (4) Indirect Learning Capacity: It is the ability of people to perceive other people's behavior and results as a result of their observations. (5) Self-Regulation Capacity: People can control and manage their behavior. (6) Self-Judgment Capacity: It is the person's judgment and evaluation according to the results of his behavior (Bandura, 1989).

The concept of self-efficacy, which is an important concept, in theory, has been defined as the beliefs of individuals in the ability to organize and achieve what should be done against situations that affect their lives (Bandura, 2001). According to Bandura, another process that is important in learning is learning through observation. Bandura observation learning; He stated that it consists of four steps called attention, remembering, motivation and creating behavior and emphasized that it can be learned through this learning style in applications of aggression and violence (Bandura, 1969, 1977b).

Bandura said that human behavior can also be affected by other people. According to Bandura, indirect experiences affecting learning are (1) Indirect Reinforcement: It is the indirect reinforcement of behavior as a result of rewarding people's behavior (Bandura, 1977b). (2) Indirect Penalty: Punishment of the person who conducts the behavior will decrease the tendency of the observer to conduct the behavior. (3) Indirect Motivation: If the person doing the behavior has a positive result as a result of the behavior, it will increase the observer's desire to perform the behavior. (4) Indirect Emotionality: The person who observes the behavior causes the tendency of the model to be afraid of their fears or to love the ones they fear (Korkmaz, 2003).

Espelage et al. (2012) suggested that the implicit cyberbullying behavior carried out in line with Social Cognitive Theory was reinforced by the sharing of

others. Likewise, in their study in Holt, Bossler, and May (2012), they stated that Social Cognitive Theory can also be used to explain cyber aberrant behaviors, and they stated that this situation can spread through peers participating in cyber aberrant behavior. Tanrikulu (2019) stated that social learning processes, where home and school environments of school-age children occur, also set the ground for cyberbullying behavior.

Social Cognitive Theory not only explains the importance of learning through observation but also includes other theories that explain behavior. One of them is “Moral Disengagement”. Bandura says that as people develop, they are influenced by their environment and family and that they try to act in the way they want in their society, by morally distinguishing good or bad, right or wrong. The person who is subjected to a self-control system to control social sanctions and behavior in any immoral behavior feels guilty (Bandura, 1990). Moral disengagement is defined as the legitimization of the behaviors of people, even though they know that they are immoral (Bandura, 1999). In short, we can say that the process of creating a cover for moral disengagement, which is made morally dissolved, makes it seen as moral to be by the person. A system that regulates moral behavior is mentioned in theory. The system includes moral norms, self-investments and moral resolution mechanisms. Moral norms are guiding in achieving a good and correct distinction in the learning process, but these norms alone are not enough. It is possible to support or violate the norm with the presence of a positive and negative self-reaction besides the norms (Bandura, 1990, 1991b).

Bandura, Barbaranelli, Caprara and Pastorelli (1996) have identified four basic mechanisms that solve the link between moral action and moral self-sanctions. These are respectively: (1) Cognitive reconstruction of moral action and the construction of moral action which is examined under three subheadings. These are: (a) Moral Legitimization: Accordingly, the event is evaluated in legal and moral legitimacy. (b) In Advantageous Comparison, the event is compared with a worse event than itself and the results of bad behavior are trying to be alleviated (Bandura, 1999). (c) Covered Language: It is to bring the immoral action to an acceptable level thanks to language. Even the action taken can be shown as valuable (Bandura, 1990). (2) Reducing responsibility: It is the avoidance of being an active agent of the actions taken by people by taking refuge under certain authorities (Bandura, 2002). (3) Reducing the importance of the consequences: ignoring, distorting and neglecting the damaging effect

of the people. (4) Accusation and dehumanization of the victim: By keeping the victim responsible for the action, the harmful action is tried to be justified and the targeted person is abstracted from his human characteristics and the conscience brought by the behavior is blinded (Bandura, 1999, 2002).

In addition to moral resolution, sensory and cognitive empathy, the distribution of responsibility and redirecting the crime to another have been found to affect cyberbullying in studies (McNulty, 2014; Robson & Witenberg, 2013; Gini, Pozzoli & Hymel, 2014; Larranaga, Navarro & Yubero, 2018).

2.13. The Protection Motivation Theory

Rogers (1983) introduced the Protection Motivation Theory to understand better how and why individuals respond to potential threats to their health and safety. The first component of the model is information sources. These sources of information include environmental and interpersonal factors that provide the person with potential threats, protective options and recommendations on whether to apply protective options. It includes environmental sources of information, potential protective responses with people such as family members, neighbors, the media or the police and interviews on the threat of victimization. Interpersonal sources of information are personality variables and previous experiences. Environmental and interpersonal sources of information provide the individual with general information about potential threats and potential protective responses (Rogers, 1983, Clubb and Hinkle, 2015).

The individual evaluates how to take protective measures for a particular threat based on the information he has acquired over time about protective responses and potential reactions. This assessment has two stages. These are the Threat assessment and coping assessment phases. The threat assessment stage includes the person's perception of the severity of the situation (Perceived Severity) and the prediction of the occurrence (Perceived Sensitivity). The coping capacity of the model includes individual belief (response effectiveness) regarding the applied proposal that can eliminate the threat and the capacity (self-efficacy) of the person to successfully perform the proposed behavior. In addition, the model predicts that emotional fear-arousal can also be indirectly affected by assessing the severity of the danger (Rogers, 1983).

When the literature is examined, the study conducted by Lwin, Li and Ang (2012) found that the perceived cyberbullying severity, reaction effectiveness and self-efficacy concerning online security behaviors were found to affect the

online security intent, but it was not detected. Doane, Boothe, Pearson and Kelley (2016) conducted another study on Protection Motivation Theory. The high perceived sensitivity towards cyber victimization has been associated with the low intention of safe behavior in electronic communications, more risk-taking behavior in the electronic environment and a high level of cyber victimization. In addition, the perceived cyberbullying victimization risk is related to the high level of secure behavior in perceived electronic communication and low cyberbullying victimization. In addition, high response efficiency and self-efficacy regarding safe behaviors related to electronic communication have been associated with high safety behavior in electronic communication.

2.14. Uses and Gratifications Theory

With the increase of mass media, the usage purposes of these tools have started to differ. It has gained speed in researches about the purpose of using mass media. The “Uses and Satisfaction Theory”, which was discovered by Elihu Katz in the 1940s and named in the 1970s, aimed at answering these questions (Alonzo & Aiken, 2004; Canöz, 2016).

Uses and Gratifications Theory has five basic assumptions. These are: (1) Audience is Active: the person uses the media to realize his purpose. (2) The Audience is the Initiative Owner: The person chooses and uses mass media or content in line with his / her own needs. (3) The Media Is Not The Only Satisfaction Source: The person may turn to other options in line with his needs. The media compete with other options. (4) People are Aware of Their Motivation and Requirements: This awareness ensures that the data related to the purposes of mass media are obtained directly from the audience. (5) While Investigating Audience Orientations, Value Judgments on the Cultural Significance of Media Should Be Ignored: While audience orientations are discovered through their concepts, moral judgments about the cultural significance of mass communication can be suspended because the audience acts individually and prefers to satisfy their needs (Katz, Blumler and Gurevitch, 1974). According to the theory, personality traits play an important role in the formation of some behaviors and the individual who is aware of his goals selects the behavior knowingly. Aware of the motivations and potentials of technology, one can deliberately turn to cyberbully behavior to harm others (Tanrikulu and Erdur-Baker, 2019).

In the study conducted by Tanrikulu and Erdur-Baker (2019) to test the Uses and Gratifications Theory, the interaction between personality traits

(online disinhibition, moral disintegration, narcissism and aggression) and cyberbullying motives (fun, revenge, harm and dominance) were evaluated. As a result of the research, it was determined that almost half of the respondents had cyberbullying behavior and their personality traits had an important role in cyberbullying behavior and motivation.

3. Result

In this review, the theories used in the literature on cyberbullying behavior have been examined. Some of the given theories have been tried to understand the causes of cyberbullying by centering on the behavior of the person, some in the environment of the person, some in the learning process, and some in personality. Most of the theories have presented to understand the causes of cyberbullying have been used for traditional bullying and later integrated into cyberbullying. This situation has enabled many theories to be used in researches and also made it difficult to understand cyberbullying behavior. Research has revealed many important factors for the causes of cyberbullying behavior, but has also helped to understand it. The lack of one theory has been eliminated through another theory. The fact that there are many factors for the cause of cyberbullying behavior increases the importance of theoretical approaches to cyberbullying behavior. In this context, the proliferation of evidence-based theoretical research has an important role both in revealing the causes of cyberbullying and in developing intervention or prevention programs.

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CHAPTER 3

GPA SUCCESS OR SYSTEM FAILURE: PANDEMIC CHALLENGES IN ELT-SPECIFIC THEORETICAL COURSES IN ELT DEPARTMENTS

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1. Introduction

The unexpected spread of the Covid-19 pandemic caused dramatic global transformations. One of the most affected systems was education which was urgently undergoing a digital transformation to reach the best pedagogical efficiency possible. On a global scale, all educational institutions had to cancel face-to-face (F2F) formal education for public health and adopted a new online practice called “emergency remote education (ERE)” (Hodges et. al., 2020). Unlike traditional online pedagogical practice, ERE aimed to fulfill pedagogical aims without compromising curricula, syllabi, and weekly class hours. Online education has quite a long place in pedagogy, yet ERE is a different practice that is adopted in emergencies. Traditional online education is more organized and specific; however, ERE cannot meet the exact pedagogical prerequisites due to its “urgent” nature (Russell, 2020). Although the world recently gained an upper hand on the pandemic with rapid vaccination, ERE is still a strong option since a specific deadline cannot be predicted. Among pedagogical disciplines, one of the most affected fields was foreign language (FL) learning and teaching which requires a communicative and social classroom environment by its nature. F2F classrooms inhabited numerous advantages such as eye contact, kinesics, or body language which unfortunately cannot be provided by ERE. New pedagogical worries emerged during ERE such as technical issues along with unreliable online

tests (Dolgunsöz and Yıldırım, 2021), isolation, and discomfort caused by the lack of physical existence of peers and instructors. This study aimed to examine the effect of ERE on English Language Teaching (ELT) specific theoretical courses in ELT departments and targeted to evaluate the efficiency of online courses along with Grade Point Average (GPA) for four semesters.

2. Literature Review

In Turkey, the curriculum was updated in 2018 in all departments of education faculties (YÖK, 2018). With this new update, ELT departments now do not only consist of EFL skill courses such as writing or listening, but also encompass several ELT-specific theoretical courses like applied linguistics, phonetics, and phonology or language acquisition. The credit load of these courses gradually increases every semester and occupies nearly half of the curriculum. These courses play an important role in the professional development of prospective ELT instructors since they mainly aim to increase awareness about the nature of language and its pedagogy. They also help to expand knowledge on language and linguistics encompassing several topics such as linguistics, phonetics, target culture, learning, and teaching approaches. The rationale of these courses depends on theoretical knowledge which makes them different from skill courses (writing, listening, speaking, and reading). The courses are carried out dominantly monolingual (English) and require learners to understand the theoretical topics properly. The effect of ERE on theoretical courses is still vague and related research is rare.

Technology dependence has been seen as the shared primary challenge of the ERE period. Technological opportunities may differ from region to region and more comprehensive integration of pedagogy into technology may be required (Carrillo and Flores, 2020). In the Chinese context, Fu and Zhou (2020) reported that the hardware facilities and wi-fi conditions are not homogenous across schools and regions. They also found out that teachers' information technology skills were not ready to meet the needs of online teaching along with insufficient online resources and platforms. The study by Onyema et al. (2020) investigated the effect of ERE in different countries. They enlisted some challenges such as poor local infrastructure and poor digital skills. Aboud (2020) proposed some internal factors adversely affected by ERE like motivation and attitudes. The study by Dolgunsöz (2021) also revealed that family structure also negatively

affected ERE course performance as family life and school life cannot be blended properly. The number of siblings at school age, daily routines at home, and other family members were reported as challenges. Another study by Dolgunsöz and Yıldırım (2021) pointed out several challenges caused by mobile devices during ERE. Lack of opportunity to reach hardware, overheating, the expense of devices, and lack of software optimization were reported as challenges for both courses and exams. The study by Liu and Yuan (2021) explored foreign language anxiety (FLA) levels during the ERE period. Their results revealed that the learners experienced high levels of FLA both at the beginning and end of the semester, neither of which changed significantly during the semester. They also found out that FLA levels predicted students' self-rated proficiency in listening and speaking English. Many other studies in different contexts like China (Talidong, 2020), Hong Kong (Forrester, 2020), Singapore (Loo, 2020), Italy (Aboud, 2020), and Greece (Karalis & Raikou, 2020) revealed several similar challenges regarding internal and external factors.

Pandemic-related studies in the EFL context are still insufficient but on the rise. The current study aimed to examine pandemic-related GPA success and challenges regarding EFL-specific theoretical courses with mixed-method procedures. This study is significant as ELT departments' curriculum not only consist of skill courses but is also formed by numerous theoretical courses required for the profession. Answers for the following research questions were sought:

1. Did the ERE period affect the GPA of ELT students?
2. What are the academic and technical challenges ELT students face during online theoretical courses?
3. What are the academic and technical challenges ELT students face during the online tests of these theoretical courses?
4. What are the ERE experiences and recommendations of the ELT students regarding these courses?

3. Method

3.1. Design

This study has an explanatory sequential design in which quantitative data collection and analysis were followed by the qualitative data phases which were used to explain the initial quantitative results (Creswell and Clark, 2011).

We adopted this design since FLA in ERE is quite a new and recent practice that is pregnant to unpredictable research findings. Hence, we prefer to obtain quantitative data (FLCAS) first for a general panorama and then to examine these findings through semi-structured interviews.

3.2. *Participants*

28 sophomore ELT students (20 females, 8 males) at an age range of 20 to 21 (SD=19,9) voluntarily participated in both quantitative and qualitative procedures. A purposeful sampling method was adopted to ensure data reliability. Hence, all participants were in the same grade (third year in the department including prep class) and took the same theoretical courses in the same setting (online and F2F) from the same instructors. All participants started taking theoretical courses in 2019-2020. Their educational context for 4 semesters was given as follows:

Table 1. Semesters and Educational Contexts of the participants

Year	Semester	Grade	Context	ELT Specific Courses
2019-2020	Fall	1	F2F	Phonetics/and Phonology I
2019-2020 (Covid Outbreak)	Spring	1	F2F/Online	Phonetics/Phonology II
2020-2021	Fall	2	Online	Applied Linguistics I English Literature I English Learning and Teaching Approaches
2020-2021	Spring	2	Online	Applied Linguistics II English Literature II Language Acquisition

3.3. *Instruments*

For quantitative procedures, the GPA of learners was obtained for every 4 semesters. For qualitative procedures, a semi-structured interview was designed. The questions were about 8 courses mentioned in the Table 1. The interview questions aimed to examine (1) in-course challenges, (2) online test issues and (3) ERE experiences related to these four ELT-specific theoretical courses. The questions were categorized as “academic” (content, style, instructor of the course) and “technical” (technical challenges and opportunities regarding courses). All interview procedure was online due to Covid-19 restrictions.

3.4. Data Analysis

Quantitative data were analyzed with 4 level repeated measures ANOVA to see the effect of educational context (F2F and Online) on GPA. RM ANOVA was adopted for this study since GPA in different time periods were aimed to be examined progressively and RM ANOVA is a statistical test that involves multiple measures of the same variable taken on the same or matched subjects either under different conditions or over two or more periods (Salkind, 2019). For the qualitative analysis, the previously recorded data were transcribed and content analysis was conducted to determine the themes. The 6-step thematic analysis method (Braun and Clark, 2006) was followed in the content analysis: (1) The interviewer and the coder made repeated readings. (2) A basic level code list has been created depending on the predetermined themes. (3) Relationships between codes were determined. (4) The interviewer and the coder scrutinized the transcriptions to determine the quotations of the participants. (5) The relationships between themes and codes were determined. (6) The findings were presented in the form of a narrative, with the necessary attention being paid to make the narration short, logical, and attractive.

4. Findings

4.1. Effect of ERE on GPA: Quantitative Analysis

A RM ANOVA was adopted to examine the effect of ERE on GPA of the participants across 4 semesters. Mean GPA values were given in Table 2 below:

Table 2. Mean GPA across semesters

Semester	Context	Mean GPA (Max 4,00)	SD
2019-20 Fall	F2F	2,98	,43
2019-20 Spring	F2F/Online	3,44	,30
2020-21 Fall	Online only	3,37	,22
2020-21 Spring	Online only	3,39	,22

Since Mauchly's test of sphericity was found to be significant ($p=.000$), Greenhouse-Geisser values were reported. A repeated-measures ANOVA with a Greenhouse-Geisser correction showed that mean GPA differed significantly between 4 semesters [$F(2.013, 54.358)= 22.332, p= .000$]. Mean GPA was found to be 2,98 (SD=,43) in the 1st semester which was F2F and it increased

up to 3,39 (SD=,22) in the 4th semester after 3 online semesters. Post hoc tests using the Bonferroni correction revealed that while the 1st semester (F2F) significantly differed from all other semesters (online) at $p < .01$ level, 2nd, 3rd, and 4th semesters did not show any significant difference between them. The plot below summarized the results:

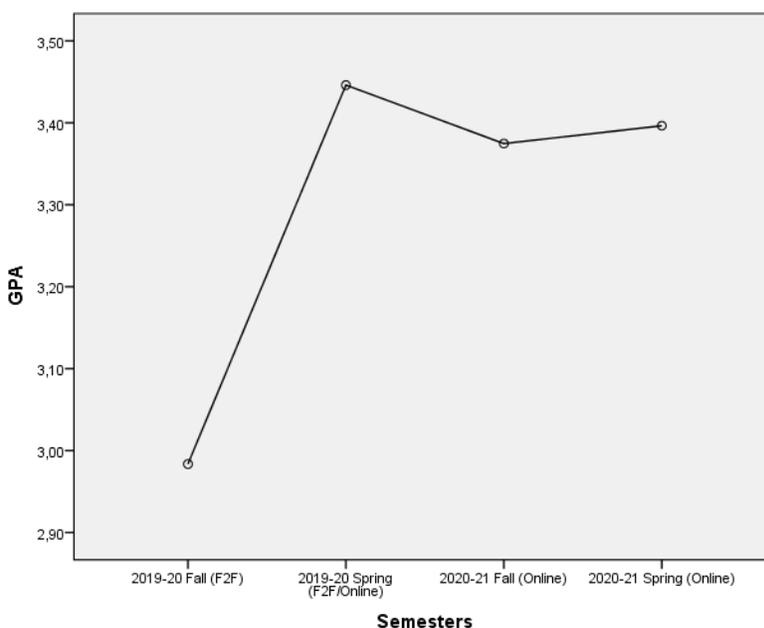


Figure 1: Plot for mean GPA across 4 semesters

The results of the quantitative analysis revealed that the GPA of the participants greatly increased with ERE. This increase started with the 2019-20 Spring semester during which ERE started and continued to keep pace. In these four semesters, the participants demonstrated GPA success with ELT-specific courses.

4.2. Challenges during ELT specific theoretical courses: Analysis of qualitative data

Quantitative results revealed success regarding GPA. The qualitative phase of the study was carried out with semi-structured interviews based on 3 themes: in-course, exams, and ERE experiences related to online theoretical courses. Each participant was coded with IDs (S1, S2, S3...) to ensure confidentiality. The first theme was summarized in the Table 3 as in-course challenges.

Table 3. In-course Challenges

	<i>f</i>	%
Technical issues		
Wi-Fi and internet problems, electricity issues	16	57,1%
Microphone issues	5	17,8%
Problems related to Mobile phone/laptop	3	10,7%
Family issues	6	21,4%
Academic issues		
Lack of motivation	13	46,4%
Lack of Non-verbal language	3	10,7%
Problems related to instructors	12	42,8%

For the first theme, the learners were asked about technical and academic challenges experienced during online ELT-specific courses. Regarding technical challenges, the major problem was observed to have been related to internet shortage and electricity (57,1%; N=16). The participants reported that they experienced internet crashes or electricity cut-offs during online courses which demotivated them.

There was always a problem during the semester...because I live in the village...we have been taking online courses for 1.5 years...there is an infrastructural problem where I live...I had to deal with it for about 1 year...when I bought a mobile internet package, it did not last for 1 week...sometimes the connection crashed during the courses...it was annoying. (S19, translated by the author)

During the courses, sometimes short lags were happening and I could not hear the teacher at those moments. Psychologically, I feel as if that moment was the key point of the lesson and I was getting demotivated. In F2F classrooms, I could have asked my friends when such a situation arises... (S4, translated by the author)

Sometimes the internet was stopping because the wi-fi in my room was not working well. Sometimes the screen and sound were not synchronous, the sound was coming late and the screen does not appear...frozen. Therefore, I usually had to watch the recorded lessons later. (S24, translated by the author)

In the beginning, more than a year ago, I experienced a lot of wi-fi problems. I live in the city center, but the internet infrastructure was

quite weak here. When I had a lot of internet problems, I purchased a mobile internet package I could not handle financially. Then my family saw that the university would not open soon, we somehow solved the problem. At first, I couldn't get used to it, of course, when there was an internet problem...after some time, it became normal. (S22, translated by the author)

A few learners also mentioned microphone problems (17,8%; N=5) and various issues related to mobile devices (10,7%; N=3). Participants also commented:

I had a lot of internet problems... for example, I can't attend the class... sometimes my microphone breaks down during the lesson, there is no sound and I cannot be heard while speaking. (S11, translated by the author)

As far as I can remember, I did not have major internet problems during the courses. I sometimes had microphone problems and I immediately informed the instructor from the chat section. In such cases, of course, I got a little disconnected from the course. It didn't cause much of a problem...I tried to handle it somehow (S5, translated by the author)

I only have a phone... no computer or laptop. I should attend classes with it. There isn't much internet access in my area anyway. Sometimes I couldn't even attend the classes. (S18, translated by the author)

Some learners were challenged by crowded families (21,4%; N=6).

We are a large family; I have 11 siblings...they are very noisy...there is also an internet problem in the neighborhood every time. (S20, translated by the author)

Our house has always been crowded; I also do not have a private room. When the guests come, the house is already very noisy. In this case, I can only listen to the lectures, I cannot participate in the courses in any way. (S18, translated by the author)

In the case of academic issues, nearly half of the participants reported that they lack motivation for the online courses and could not feel the F2F classroom setting (46,4%; N=13). Some of them stated that they could not take the

courses serious since it was virtual and lacking non-verbal language and social interaction (10,7%; N=3).

I haven't learned much in 1.5 years. It's as if I've regressed more, I don't write, I don't speak... It's like online classes aren't compulsory... as if it does not exist... you can attend whenever you want and leave whenever you want... there's no pressure... it's not programmed like F2F education... there's no sense of responsibility either. (S25, translated by the author)

We were getting much more efficiency from F2F education. For example, when the education was face to face, I was more comfortable, I felt more responsible... there is a teacher in the classroom, he guides you... I also feel comfortable with online lessons but I cannot find the same responsibility and motivation. (S1, translated by the author)

Furthermore, 42,8% (N=12) of the participants reported that the content and instructional style of the courses greatly vary among the instructors and some of the courses were harder to follow when compared to some others.

I got good results from some courses, but not from others. Some professors teach students by making them read from the book. I don't understand the sections my friends read anyway. I don't understand when I read it aloud myself. The instructor is not motivating enough. (S12, translated by the author)

No matter how many times I attend some classes, I don't understand anything...it's empty so...for example, new instructors came during the pandemic...we never saw them after all and we don't know them at all. They also do not know us. I can't be motivated in their classes... they are like strangers. I already got low in their exams because I don't know what they want. (S22, translated by the author)

Some courses were really good, but I can't say the same for others. For example, some lessons took too long, I was afraid that the lesson would be interrupted if I asked where I did not understand. The teacher doesn't give much feedback anyway. Not enough visuals were used, I couldn't remember what was being said. I always was watching the course again later (S4, translated by the author)

For the next theme, the participants were asked about technical and academic challenges they experienced during online tests.

Table 4. Challenges related to Online Tests

	f	%
Technical issues		
Test system crash/Internet issues	9	32,1%
Academic issues		
Reliability problems/Cheating	5	17,8%
Problems related to test duration	10	35,71%

Surprisingly, no major challenge was found related to online tests. Only 32% (N=9) of the participants complained about system crashes and internet shortages during online exams.

Once in an exam, my internet crashed and I had to log out. After a few minutes, I logged in again and went on my exam thanks to the system. But I lost time (S10, translated by the author)

I haven't had a problem yet, but in the neighborhood, the electricity is cut off at least once a week. I always worry that it may coincide with the online exams. Fortunately, the exam system records the answers constantly, in such a case, I think I can continue the exam from where I left off. (S8, translated by the author)

Similarly, 35,7% (N=10) found the duration of the online tests unbalanced. A few learners mentioned reliability and cheating issues during the online tests (17,8%; N=5). Regarding online tests, participants commented:

Online exams are not reliable because cheating is very easy. It's not fair, questions can be searched online. Unfortunately, cheating is committed in every exam, but we can't say anything (S9, translated by the author)

For example, if the exam is long, cheating will be committed. But when it is short, I get very nervous... I do the questions in a hurry. Even though I know the answers, I always try to finish the exam quickly... everything messes up ... That's why short exams are very stressful. (S3, translated by the author)

There is a rush to finish the short exams. For example, there are some exams with 2 hours duration. In these exams, the questions are open-ended...not multiple choice. Although the duration is long, I am not even sure if we have covered the topic in the lesson. There must be a middle ground. We have a book with us in exams, of course, we take a look when it's long... (S28, translated by the author)

The final theme aimed to reveal ERE experiences and recommendations of learners related to ELT-specific courses.

Table 5. ERE experiences and Recommendations

	f	%
Experiences and Major recommendations		
Shorter course duration and more breaks	2	7,1%
Seriousness	8	28,5%
More communication	2	7,1%
More participation	12	42,8%

Nearly half of the participants reported that online course participation was the most important factor for course efficiency (42,8%; N=12). These participants emphasized that in-course interaction greatly contributed to expanding theoretical knowledge.

I would have been more productive if I had not only attended the classes but had participated more in class. In this way, an interactive environment is created and you understand the subject much better. For example, there were in-class discussions and participating in them motivates you and you adopt the lesson more. (S16, translated by the author)

I did not actively participate in the classes, I just listened. Then I was asking my friends about the places I did not understand on WhatsApp etc. But most of the time they didn't know either. That's why I wish I had asked the teacher about the things I did not understand in the lessons during the lesson. (S24, translated by the author)

I was attending classes but not participating much... actually because I was a little shy. I have a shy nature. I recommend actively participating in the classes because you learn better...the more you ask questions...the more you get answers, the more you remember the topics. (S4, translated by the author)

Some learners also remarked being more serious towards online courses (28,5%; N=8). They mostly reported that attending courses on a serious schedule was important for better learning gains.

I attended most of the courses, that is, I attended 80 percent of them in 1.5 years. Sometimes there can be slackness and not taking it seriously.

But my advice is to take these courses seriously...it is a must to attend every lesson... because these lessons are no longer redeemed and we will need these subjects in the future. (S3, translated by the author)

I wish I had worked more regularly and given due diligence. I wish I could follow the lectures better. Now I'll have to work extra this summer to make up for my shortcomings. I wish everyone had all the opportunities... (S11, translated by the author)

Since the lectures are recorded and can be watched later, there is a sense of frivolity... I feel comfortable watching it later. But you should attend the classes on time, because so many topics accumulate to watch later, and you can't get them together. There should be serious scheduled attendance to the classes on time. (S12, translated by the author)

Some learners recommended shorter course duration to get more focused (7,1%; N=2) and to be always in contact with the instructors before and after the courses (7,1%; N=2).

Some courses take too long... almost 1.5 hours. After a long time, we get very bored and break up. Half an hour is an ideal time. Breaks can be given in between. It's not like a classroom,..after all, you get bored sitting in front of the screen for a long time (S7, translated by the author)

I wish I had told the teacher what I saw as problematic in the lessons from the very beginning. When something goes wrong in online lessons, it is necessary to inform the instructor immediately. For example, wish I had advised the teacher to construct sentences in one language... unfortunately she was speaking in 3 languages. (S2, translated by the author)

5. Discussion

This study aimed to examine challenges related to ELT-specific theoretical courses during the ERE period. The rationale behind this study was that since these types of courses were carried on online for 1.5 years due to the pandemic, the students in the ELT departments might have been challenged by some technical and academic factors. The initial findings showed that the GPA of learners dramatically increased in the ERE period. Rather than the “unexpected success” of the learners, the spike in the GPA might be more related to the new system itself. The sudden outbreak of the Covid-19 pandemic caused an

obligatory transformation in education systems and by its nature, ERE has been considered less organized and specific due to its urgent characteristics (Hodges et. al., 2020). Given that most universities were unprepared for remote teaching and learning especially during the early periods of the pandemic (Russell, 2020, p.146), the new ERE system in Turkey has needed time to establish. In general, the instructors had to complete their courses in limited periods due to the online systems and they obligatorily compress topics in online courses in which they could not get in the details. Especially in the 2020-21 Academic year, most universities adopted more organized online platforms which suppressed some technical issues; however, students were able to watch the previously recorded courses. Therefore, classroom participation decreased and the looseness caused by online course recordings increased. Classroom discussions, feedback, and classroom interaction related to the theoretical side of these courses dramatically decreased. The online exams got shorter to ensure fair play and short online multiple-choice exams became popular causing GPA inflation during the ERE period.

The next prominent finding of the current study was that ELT students were still challenged by technical issues to a certain extent. Remote education is demanding; it requires an optimized internet connection and strong infrastructure. Confirming the studies by Doyle (2020) and Outhwaite (2020), the results of this study pointed to some socioeconomic inequalities causing lack of resources including access to educational technologies and the Internet; and lack of physical spaces to carry out home-based learning among families from a low-income background. Even after 1.5 years of ERE, students still complained about internet problems and crowded families.

Regarding academic challenges, the students mostly reported they could not have the desired motivation during the courses due to a lack of non-verbal language and instructional style. Non-verbal language is an important component of foreign language communication. According to Cosnier (2008), “gestures that accompany discourse” (non-verbal units we use during communication) and the “gestures that monitor interaction” (non-verbal units we demonstrate while listening) are vital parts of efficient communication. Hence, facial expressions or gestures such as nods or smiles play a vital role in the classroom. In the ERE period, proper use of non-verbal behavior is only possible with webcams. The study by Develotte, Guichon, and Vincent (2010) remarked that when instructors utilized and used their webcam effectively, it added to the socio-affective

dimension of pedagogical communication and provided better motivation to carry on the courses. Webcam usage by instructors might not be common in all courses and indeed it is not an obligation. However, using webcams has merits that can help to support classroom interaction.

Another prominent academic challenge was found to be the style of instruction. The participants reported that course efficiency was not homogenous across courses due to varying instructional styles. This finding confirmed Russell (2020) who proposed an urgent need for professional support for language instructors on online instruction. ERE not only caught institutions unprepared but also overwhelmed instructors. Most instructors did not have required online instruction skills and practice since their experiences were mostly dependent on F2F education. Even some instructors especially above a certain age lack digital literacy. Unfortunately, most teacher education programs do not provide training on online language pedagogy (Russell and Muphy-Judy, 2020). Due to the lack of knowledge and practice on remote education, many instructors stumbled on course planning, designing, and implementation. This confusion was also reflected upon the students causing in-course motivation to decrease.

Regarding online testing, challenges were less than expected. Some learners reported issues related to harmless system crashes and unbalanced test duration. Although learners mentioned system crashes during online tests, they also stated that the online test platform supported them and minimized their losses. On the other hand, short online tests were subjected to complaints probably due to their effect on test anxiety. Test anxiety is a common type of foreign language anxiety that arouses during or before foreign language tests (Horwitz, Horwitz and Cope, 1986). It generally derives from fear of failure, (Horwitz and Young, 1991), test validity (Young, 1999), task difficulty, self-efficacy, and lack of preparation for a test (Aydın, Yavuz, and Yesilyurt, 2006). In the ERE period, a proper online test platform can help students to decrease online test anxiety; however, very short exams can inflate anxiety due to task difficulty and test validity. Furthermore, it could be assumed that the low rate of complaints about online tests during ERE could be explained by high GPA scores. At the end of the day, regardless of online test quality, learners obtained satisfying scores across 3 online semesters. Hence, short test duration, validity issues, and technical challenges did not make a general impact on online test success.

Finally, learner experiences and recommendations related to ERE were examined. The results were learner-oriented rather than system-oriented. Instead of reporting system issues, the participants mentioned problems related to themselves. Active in-class participation was valued and recommended most to benefit from these courses. Similarly, the prominent recommendation was approaching online courses seriously in a more scheduled study discipline. It could be inferred that recording courses in an online system were both pros and cons. The results indicated that recorded course sessions provided pedagogical opportunities; however, this opportunity had the potential to cause undesirable comfort among learners. Some learners even preferred to watch recorded courses rather than attending synchronous online sessions decreasing active classroom participation and study discipline.

6. Conclusions and Pedagogical Implications

This study aimed to investigate challenges related to ELT-specific courses during the ERE period. The most interesting finding was that despite the pandemic, students dramatically increased their GPA in 1.5 years. It is surely an issue to ponder on; we are not sure if it is the success of the students or the failure of the ERE system. In general, challenges and complaints were found to be less than expected; most viable challenges were around 40%- 50% along with some mild problems such as test duration, family matters, and course hours. Technical challenges such as internet shortage were found to be still keeping their seat as a chronic challenge. Albeit, this study showed that ELT students and institutions adapted to the pandemic conditions and transformed themselves as much as possible. Some implications were as follows:

- Technical problems are still intact, especially in low socio-economic regions.
- Instructors should find ways and develop better instructional materials to increase motivation for the courses since the students still lack motivation during the courses.
- Communicative tools such as Webcams and the like should be used more effectively during the courses to ensure better classroom interaction.
- Professional support on online language instruction is needed; institutions may think of organizing a series of seminars on remote education.
- The duration of the online tests should be stable and balanced.

- Assessment and evaluation style can be paid more attention to since some learners still complain about reliability and cheating.
- Course duration can be scrutinized; a longer duration for theoretical courses might be problematic since learners can get bored easily.
- Instructors should think about giving more responsibilities to students such as projects, collaborative works, seminars, presentations, readings to boost the feeling of responsibility and study discipline.

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CHAPTER 4

EXAMINING THE PROBLEMS IN 4TH GRADE MATHEMATICS TEXTBOOK IN TERMS OF SENSITIVITY TO SOCIAL ISSUES

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“There is no justice in a society where people do not know mathematics.”
John Forbes Nash Jr.

1. Introduction

Textbooks have a crucial role and importance in any school system, as they act as a bridge between teachers and students (Altun et al., 2004, p.132). In all teaching stages, textbooks are the most critical resource used by teachers and students (Baron, 1990). All subjects in a textbook should be given in a whole, in accordance with the curriculum accepted by the Ministry of National Education, in association with other disciplines, and by using teaching methods and strategies appropriate for the content (Demirel and Kiroğlu, 2020, p.43). Drake and Norton-Meier (2012) state that teachers take a crucial first step in identity development. Teachers support this identity development through explicit and implicit messages in textbooks.

On the other hand, if we consider the many roles that mathematics plays in society, mathematical knowledge appears crucial for social participation:

“Mathematics, like reading, can be turned into a subject that is a rich source of discourse and debate, of conjecture and the testing of ideas, and even

a critical contributor to democratic practices when taught correctly” (Ambrose, 2012, p.86 as cited in Ball & Bass, 2008).

When people are asked, “What is the object of schooling?” they almost often respond that it is to uphold democratic values, civic and global duty, equity and justice, moral character development, whole-person development, or learning valuable knowledge for real-life and economic opportunity. Hopefully, schools should assist us in developing various aspects of literacy—for personal growth, group survival, the workforce, and active citizenship. On the other hand, school mathematics has long been separated from different topics and students’ lives and desires outside of the classroom, both historically and abroad (Forgasz & Rivere, 2012). Approaches to teaching mathematics that discuss equality, fairness, and social justice should be embraced (Gutstein, 2006; Esmonde & Caswell, 2010; Jacobsen et al, 2012; Harrison, 2015; Wright, 2016).

Encouraging students to think interdisciplinary is an important component to be able to connect in-school and out-of-school mathematics. One of National Council of Teachers of Mathematics (NCTM)’s process standards, the *Connections*, is also directly related to this component (NCTM, 2000). In this context, interdisciplinarity refers to the reality, content, or state of two or more academic fields or branches of learning. Interdisciplinarity initiatives often cross conventional boundaries between academic disciplines (Roth, 2014). Relationships within mathematics and between mathematics and other disciplines assist students in understanding mathematical relationships and how mathematics is applied and linked to other disciplines (James & Adams, 1998).

In addition to interdisciplinarity, students must have the opportunity to explore mathematics in a real-world setting. Mathematics is used in other disciplines such as science, social sciences, medicine, and commerce. Not only is there a connection between mathematics and science in terms of content, but also in terms of process. The process and content of science can inspire an approach to solving problems that apply to the study of mathematics (NCTM, 2000).

According to Realistic Mathematics Education, context is vital for mathematics teaching. Context is regarded as a helpful resource and a decent place to develop real-world mathematical concepts (Freudenthal, 1991). Using mathematical knowledge and skills in daily life is also associated with mathematical literacy (Kabael, 2019). The types of event that anyone can experience in their lives are the subject of mathematical literacy problems (Altun, 2020).

“Effective teaching is not just about having a powerful command of the content that you teach. Who you are, who you teach, and under what sociocultural, sociopolitical, and sociostructural conditions are equally, important and will heavily influence how you teach and toward what ends” (Martin, 2012, p.6).

All in all, traditional mathematics classrooms generally lack relevance and use. Issues-centered education provides both relevance and use (Evans & Saxe, 1998).

2. Purpose of the Study

Within the scope of theoretical discourses so far, this study aimed to examine the problems in the 4th-grade mathematics textbook in terms of sensitivity to social issues.

3. Method

3.1. Research Model

In this study, qualitative research methodology was used because it was aimed to examine and interpret the problems in the textbook in depth. According to Yıldırım and Şimşek (2018), qualitative research is described as research in which qualitative data collection methods such as observation interview and document analysis are used, and holistic. Document review was used because it aims to examine the problems in the mathematics textbook. Document review involves the analysis of written materials that contain information about one or more cases to be investigated (Yıldırım & Şimşek, 2018).

3.2. Data Analysis

The data were analyzed using the content analysis technique since researchers aim to collect similar issues under the same categories. Content analysis refers to any attempt at qualitative data reduction and interpretation to identify key coherences by taking bulky qualitative material (Patton, 2018).

4. Information About the Examined Textbook and Problems

For the purpose mentioned in the previous paragraph, the 4th-grade mathematics textbook of MEB (Turkish Ministry of Education) publications was examined. These analyzes were made on the basis of six social issues (*Environment, Gender Roles, Solidarity, Saving, Healthy Nutrition, and Respect for Cultural Values*). Overall, there are 580 problems in the textbook. But only 24 of them deal with social issues. The distribution of problems to social issues is shown in Table 1.

Table 1. Distribution of problems

Social Issues	Number of Problems (f)	%
Environment	5	20,83
Gender Roles	5	20,83
Solidarity	5	20,83
Saving	2	8,33
Healthy Nutrition	2	8,33
Respect for Cultural Values	5	20,83
Total	24	100

Looking at the values in Table 1, it is seen that there are equal numbers of (5) problems in each of the *Environment*, *Gender Roles*, *Solidarity* and *Respect for Cultural Values* categories, and fewer (two each) problems in *Saving* and *Healthy Nutrition* categories. In the next section, examples of problems from the textbook for each of these social issues are given.

5. Sensitivity to Social Issues in the Textbook

5.1. Environment

All humans require and deserve a healthy and sustainable environment and ecosystem (Capeheart and Milovanovic, 2007). Schools play a vital role in developing environmentally conscious students (Rogayan & Nebrida, 2019). Environmental issues are pollution, use of natural resources, land use, extinction of species/biodiversity, disposal of toxic wastes, energy issues, conservation, and renewable versus nonrenewable energy (Evans & Saxe, 1997).

When the problems in the mathematics textbook are examined in terms of environmental sensitivity, we encounter five problems.

- 4 Okullar arası düzenlenen atık pil toplama kampanyasında, her 1000 pil topladığında okul bir flama kazanmaktadır. Cumhuriyet İlkokulu, bu kampanyada 10 flama kazanmıştır. Biner biner sayarak Cumhuriyet İlkokulundaki öğrencilerin kaç pil topladığını bulunuz.

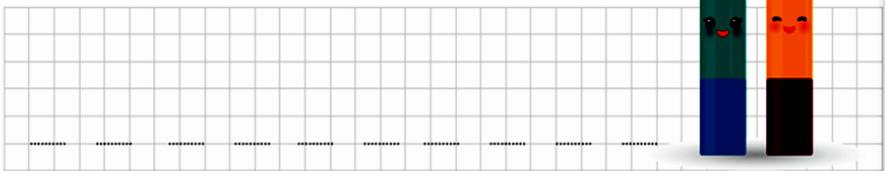


Figure 1. (p.26)

“In the battery recycling campaign organized between schools, the school earns a pennant every 1000 batteries are collected. Cumhuriyet Primary School won 10 pennants in the campaign. Find out how many batteries the students in Cumhuriyet Primary School collected by counting in thousands.”

The importance of the textbooks in terms of recycling and raising sensitivity on this issue is an indisputable fact (Önal et al., 2019). Considering the content of the problem, a waste battery box could be included in the relevant picture. The benefits of recycling, such as reducing environmental pollution and contributing to the country’s economy, could be given in the problem. It means that we should encourage students to think critically about present environmental issues.

A

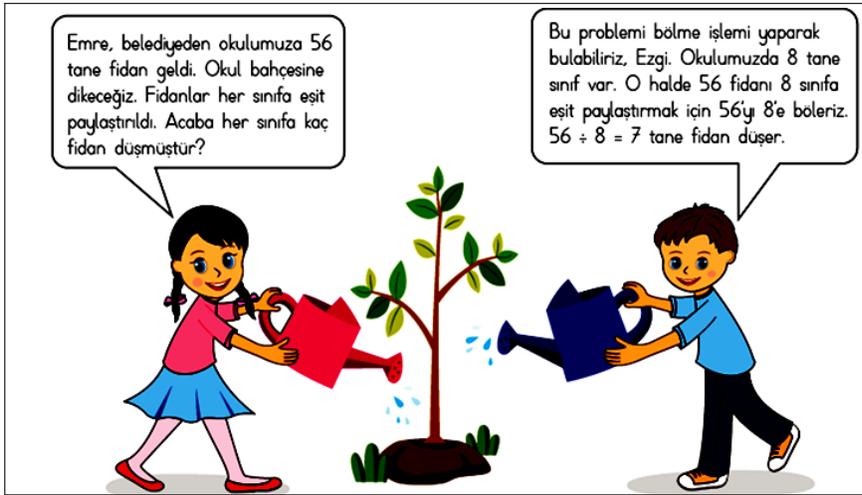


Figure 2. An example of protecting the environment (p.113)

“Ezgi: The municipality gave 56 saplings to our school. We will plant them in the school garden. Saplings were shared equally to each class. I wonder .how many saplings did each class get?

Emre: We can find this problem by division. There are eight classes in our school. So, we divide 56 saplings by 8 to share them equally to 8 classes. Each class gets $56 / 8 = 7$ saplings.”

This question implicitly mentions the importance of planting trees in greening the environment we live in. Furthermore, pictures are among the essential factors in textbooks because they affect the degree of visual attention given (Demirel & Kiroğlu, 2020; Behnke, 2016). Picture of problem indirectly encourages students to grow a plant. It triggers students to think in the content of social sensitivity.

Küresel ısınmaya dikkat çekmek amacıyla yapılan koşuda, Meltem 1447 metre koşmuştur. İlker, Meltem'in koştuğundan 389 metre daha az koşmuştur. Ayhan ise Meltem ve İlker'in toplam koştukları yol kadar koştuğuna göre Ayhan kaç metre yol koşmuştur?

A) 1954 m

B) 2505 m

C) 2678 m

D) 3121 m

Figure 3. A problem about global warming (p.78)

“In the race to draw attention to global warming, Meltem ran 1447 meters. Ilker ran 389 meters less than Meltem ran. On the other hand, since Ayhan ran as much as the total distance of Meltem and Ilker, how many meters did Ayhan run?”

Unlike other problems in the mathematics textbook, this problem includes global warming as content in environmental sensitivity. However, the absence of a visual about the problem reduces the effectiveness of problem. If the problem had a picture about global warming, it would enable students to reflect on that picture.

Okullar arası atık kâğıt toplama etkinliğinde, toplanan her kilogram kâğıt için 1 puan verilecektir. Toplanan kâğıtlar 1000 kilograma ulaştığında ise ödül olarak 100 puan daha verilecektir. Örnekleri inceleyiniz. Ödül puanlarla birlikte kazanılacak toplam puanı, zihinden toplama yaparak tablodaki uygun bölüme yazınız.

Toplanan Kâğıt (kg)	Ödül Puan	Toplanan Puan
1543	100	1643
3652	300	3952
5274		
6032		
8562		
8100		
5049		
4364		
7736		
2692		
1320		
4750		
6025		

Figure 4. A problem about paper recycling (p.58)

“In the inter-school waste paper collection event, 1 point will be given for each kilogram of paper collected. When the papers reach 1000 kilograms, another 100 points will be awarded as a reward. See the examples. Write down the total point to be earned together with the prize points in the appropriate section of the table by collecting mentally.”

Collected Papers (kg)	Reward Points	Collected Points
1543	100	1643
3652	300	3952
5274		

Paper recycling and conscious paper consumption are crucial in contributing to the country’s economy and energy resources. The problem causes students to learn different subjects by mentioning paper recycling.



Figure 5. The dialog, which appears as a reminder about the mental multiplication process (p.89)

“Emre: Our teacher said that the number of waste batteries coming to the school this week is three decks.

Ezgi: Since there are 10 units in a bundle, $3 \times 10 = 30$ waste batteries came to the school this week.”

Various chemicals in waste batteries can cause environmental pollution by mixing with irrigation water and soil wild garbage storage areas. That’s why teachers should tell children about the importance of waste batteries from an early age. However, both Figure 1 and Figure 5 do not mention the benefits of collecting waste batteries. On the other hand, both mathematics and environment education increase critical thinking ability (Habibi, 2014). Expressions that can encourage students to think critically can be included in the problem contents.

“A mountaineer set out with all safety equipment. He climbed 1568 meters on the first day, 2674 meters on the second day, and 1309 meters on the third day. How many meters did this climber climb?”

2 Bir futbol maçında ilk yarıda 181, ikinci yarıda 269 pas verildiği kaydedilmiştir. Bu maçtaki toplam pas sayısını en yakın onluğa yuvarlama yöntemi ile tahmin ediniz. Verilen pasları toplayınız, tahmini sonuç ile karşılaştırınız.



Figure 7. A problem about gender roles (p.)

“In a soccer match, it was recorded that 181 passes were made in the first half and 269 passes in the second half. Estimate the total number of passes in this match by rounding to the nearest ten. Add the passes given and compare with the estimated results.”

1 Kütlesi 75 kg olan bir halterci, kütlesinin 2 katını 3 defa kaldırmıştır. Bu sporcunun toplam kaldırdığı kütle kaç kğ'dır?



Figure 8. A problem about gender roles (p.267)

“A weightlifter with a mass of 75 kg lifted 2 times his mass 3 times. What is the total mass that this athlete lifts?”

Housework such as cooking and cleaning is attributed to women in the context of mathematical problems. Here are some examples:

2 Annemle ablam hafta sonu evi temizlediler. Ablam, her odaya eşit zaman ayırarak 3 odayı toplam 78 dakikada süpürdü. Annem, 3 odanın camlarını toplam 90 dakikada silti. Ablamla annem işlerini aynı anda bitirebilmek için ne yapmalıydı? Problemin eşitliğini yazıp çözünüz.

Figure 9. The problem about gender roles (p.121)

“My mother and sister cleaned the house over the weekend. My sister swept 3 rooms in 78 minutes, giving equal time to each room. My mother wiped the windows of 3 rooms in 90 minutes in total. What should my sister and mother do to be able to finish their work at the same time? Write the equality of the problem and solve it.”

Sarp, teyzesinin yapmış olduğu kurabiyein önce $\frac{1}{8}$ 'ini daha sonra $\frac{3}{8}$ 'ünü yemiştir. Kurabiyein kaçta kaç kalmıştır?



Figure 10. The problem about gender roles (p.154)

“Sarp ate $\frac{1}{8}$ of the cookies his aunt baked then ate $\frac{3}{8}$. How many cookies left?”

While activities such as cooking and washing clothes are seen as a duty for women, men are appreciated when they do these activities. To change this way of thought, we must start teaching children about gender equity in elementary school.

5.3. Solidarity

Solidarity is the primary feature that brings people closer to each other in society. It also ensures the development of a society. When there is a situation of sadness, people voluntarily act together to reduce the distressing situations. Activities that will contribute to social cohesion should be carried out from an early age. Cases aimed at social solidarity and cooperation can also be given in mathematics.

When problems in the mathematics textbook are examined in terms of solidarity, it appears to be included in the contexts of the problems.

Bir fırıncı, 570 ekmeğin 400 tanesini sattı. Geri kalanını sokak hayvanları için bağışladı. Fırıncının kaç ekmeği bağışladığını zihinden bulunuz. Cevabınızı kutuya yazınız.



Figure 11. An example of a problem with helping stray animals (p.46)

“A baker sold 400 out of 570 loaves of bread. The baker donated the rest for street animals. Find out in mind how many loaves of bread the baker donated. Write your answer in the box.”

Atatürk İlkokulu öğrencileri “Kitaplarımı Paylaşıyorum” kampanyası ile topladıkları kitapları ihtiyacı olan köy okullarına göndereceklerdir. Kampanya sonunda 2450 adet kitap toplanmıştır. Kitapların 745 tanesi Haydarlı İlkokuluna, 466 tanesi ise Akalan İlkokuluna gönderildiğine göre geriye kaç adet kitap kalmıştır?

Figure 12. A problem about sharing books in 4-th grade mathematics (p.71)

“Atatürk Primary School students will send the books they collect through the “I’m Sharing My Books” campaign to the village schools in need. At the end of the campaign, 2450 books were collected. Since 745 of the books were sent to Haydarlı Primary School and 466 to Akalan Primary School, how many books are left?”

Samsun’da yardımsever mahalle sakinleri, ihtiyaç sahiplerine verilmek üzere 1760 adet gıda kolisi hazırlamışlardır. Birinci hafta kolilerin 475 adedi dağıtılmıştır. İkinci hafta, birinci hafta dağıtılandan 27 eksik koli dağıtılmıştır. Buna göre geriye kaç adet koli kalmıştır?

Figure 13. A problem about sharing in 4th-grade mathematics textbook (p.72)

“The benevolent resident of the neighborhood in Samsun have prepared 1760 food parcels to be given to those in need. In the first week, 475 of the packages were distributed. In the second week, 27 fewer parcels were distributed than the first week. Accordingly, how many parcels are left?”

Bir giyim firması, ihtiyaç sahiplerine dağıtmak üzere 452 adet kazak, 648 adet pantolon, 322 adet gömlek hazırlamıştır. Kazak, gömlek ve pantolon sayılarının toplamının 506 eksikliği kadar da mont paketlenmiştir. Verilenlere göre kaç mont paketlenmiştir?

Figure 14. A problem about sharing in 4th-grade mathematics textbook (p.78)

“A clothing company has prepared 452 sweaters, 648 pants, and 322 shirts to be distributed to those in need. Coats were packaged less than 506 of the sum of the number of sweaters, shirts, and trousers. How many coats are packed according to the given?”

Helin, okumuş olduğu 500 adet kitabı 10 kişiye vermek istiyor. Her bir kişiye kaç adet kitap düşeceğini bulalım.

Figure 15. A problem about sharing (p.106)

“Helin wants to give 500 books she read to 10 people. Let’s find out how many books each person will receive.”

5.4. Saving

Another social problem encountered in the context of the problems is saving. Here are some examples:

Kumbaramda 1 TL ve 50 kuruşlar var. Kumbaramdan 3 tane bozuk para aldığımda elime kaç lira geçmiş olabilir? Olabilecek sonuçları liste halinde yazarak gösteriniz. Daha sonra bu durumu sınıf ortamında canlandırınız.

Figure 16. A problem about saving (p.63)

“I have 1 TL and 50 kuruş in my moneybox. How many lira could I get when I got 3 coins from my piggy bank? Show possible results by writing them in a list. Then simulate this situation classroom.”

Emre, tutumlu bir çocuk olduğu için bisikletini kendi biriktirdiği para ile almak istemektedir. Beğendiği bisikletin fiyatı 325 TL’dir. Emre’nin kumbarasında 146 TL olduğuna göre daha ne kadar para biriktirmesi gerektiğini sayıları en yakın onluğa yuvarlayarak tahmin ediniz.



Figure 17. A problem about saving (p.67)

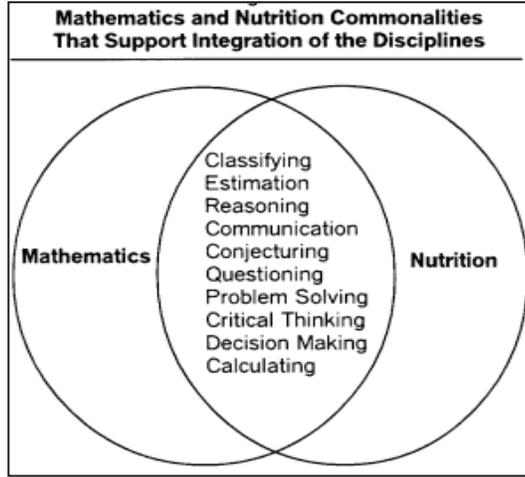
“Since Emre is a frugal child, he wants to buy his bike with the money he has saved. The price of the bike he likes 325 TL. Emre has 146 TL in his moneybox; estimate how much more money he will need to save by rounding the numbers to the nearest ten.”

5.5 Healthy Nutrition

The rise in childhood obesity is closely linked to an unbalanced diet and a sedentary lifestyle (Franciscato et al., 2019; Follong et al., 2020). School-aged children’s eating habits are heavily affected by the school setting, and peers become a source of reference for the infant. The school climate promotes individuality, decision-making, and weighing options, all of which are essential life skills. As a result, school becomes the ideal way to adopt a food education

curriculum, both as a comparison setting and as a means of reaching a significant number of students (James & Adams, 1998).

Nutrition can be adopted into the mathematics program of a primary school by promoting teaching with nutrition as the basis for addressing mathematics principles and procedures (James & Adams, 1998).



Source: James & Adams, 1998, p.5

In *Mathematics Teacher Education In The Public Interest: Equity and Social Justice* by Jacobsen et al. (2012), obesity is seen as a social issue. There is no direct problem related to obesity in the 4th-grade mathematics textbook. Therefore, the researcher presented the problems about healthy nutrition for this category here.

In the mathematics textbook, there are only two problems related to healthy nutrition. In addition, the pictures in the textbook encourage students to consume fresh fruits and vegetables.

Bir anaokulu, sağlıklı bir sabah kahvaltısı için tavuk çiftliğinden 690 tane yumurta almıştır. Yumurtaların 60 tanesi kırılmıştır. Kaç tane sağlam yumurta kaldığını bulalım.

Figure 18. A problem about healthy nutrition (p.46)

“A kindergarten bought 690 eggs from the chicken farm for a healthy breakfast. 60 of the eggs were broken. Let’s find out how many unbroken eggs are left.”

Sağlıklı beslenen Neslihan Hanım, kahvaltıda 632 kalori, öğle yemeğinde 684 kalori, akşam yemeğinde 488 kalori almıştır. Neslihan Hanım’ın aldığı kaloriler en yakın onluğa yuvarlandığında toplam kaç olur?

Figure 19. A problem about healthy nutrition (P.77)

“On a healthy diet, Mrs. Neslihan received 632 calories at breakfast, 684 calories at lunch, and 48 calories at dinner. What is the total number of calories Mrs. Neslihan takes when rounded to the nearest ten?”

Nutrition can be integrated with math topics such as number sense, fractions and measurements. Problems about healthy nutrition can be increased in textbooks.

5.6. *Respect For Cultural Values*

As stated in NCTM (2000), mathematics is one of humanity’s most significant cultural and cognitive achievements. Mathematics has always been an important part of people’s traditions, and students should be concerned with all people in this “one world” in which we exist. Teachers will promote international understanding by introducing students to different cultures’ mathematical activities (Zaslavsky, 1993). In the mathematics textbook, there are five problems that contain cultural components. Four of the problems concern feasts, while one concerns traditional dancing. Other cultures are not included in the textbook.

Geleneksel Horon Şenliği için 1814 adet afiş basılmıştır. Basılan afişlerin 1278 adedi hemen dağıtıldığına göre kalan afiş sayısını birlikte bulalım.



Figure 20. A problem about traditional Turkish dance (P.69)

“1814 posters were printed for the traditional Horon Festival. Since 1278 of the printed posters are distributed immediately, let’s find the remaining number of posters together.”

Hakan, Hasan ve Hilal aileleriyle birlikte yaptıkları Ramazan Bayramı ziyaretlerinde topladıkları şekerleri saymışlardır. Hakan 147 tane, Hasan 128 tane şeker toplamıştır. Hilal ise Hakan ve Hasan’ın topladığı toplam şeker miktarının 76 eksiği kadar şeker toplamıştır. Hilal’in topladığı şeker miktarı kaçtır?

Figure 21. A problem about religious feast (P.71)

“Hakan, Hasan, and Hilal counted the candies they collected during their Ramadan Feast visits with their families. Hakan collected 147 sugars, Hasan

collected 128 sugars. Hilal collected 76 less sugar than the total amount of sugar collected by Hakan and Hasan. What is the sugar amount that Hilal collects?”

19 Mayıs Atatürk'ü Anma ve Gençlik ve Spor Bayramı etkinliği için stadyuma toplam 2256 öğretmen ve öğrenci gelmiştir. Stadyuma gelen erkek öğrencilerin sayısı 940'tır, kız öğrencilerin sayısı ise erkek öğrenci sayısından 134 eksiktir. Buna göre stadyuma gelen öğretmen sayısı kaçtır?

Figure 22. A problem about national holiday (P.75)

“A total of 2256 teachers and students came to the stadium for the May 19 Commemoration of Atatürk and the Youth and Sports Day event. The number of male students coming to the stadium is 940, while the number of female students is 134 less than that of male students. Accordingly, what is the number of teachers coming to the stadium?”

23 Nisan Ulusal Egemenlik ve Çocuk Bayramının kutlama töreninde her öğrencinin elinde 2 bayrak olması kararlaştırılmıştır. Şirinköy İlkokulunda 12 şube ve her şubede 18 öğrenci bulunduğu göre törende öğrencilerin elinde kaç tane bayrak olacağını bulalım.



Figure 23. A problem about national holiday (P.83)

“During the celebration ceremony of April 23 National Sovereignty and Children's Day, it was decided to have 2 flags in each student's hand. Since there are 12 branches in Şirinköy Primary School and 18 students in each branch, let's find out how many flags will be in the hands of the students at the ceremony.”

Atatürk İlkokulu 4. sınıf öğrencileri, 23 Nisan Ulusal Egemenlik ve Çocuk Bayramı için tören kıyafeti diktiriyor. 4. sınıflar 3 şubedir ve sınıfların öğrenci sayıları eşittir. Kıyafetler 2268 TL tutmuştur. Her sınıfın ödemesi gereken miktar bulunuz.

Figure 24. A problem about national holiday (P.125)

“4th-grade students in Atatürk Primary School have a ceremonial outfit sew for April 23 National Sovereignty and Children's Day. 4th grades have 3 branches, and the number of students in the classes is equal. The clothes cost 2268 TL. Find the amount each class has to pay.”

Communication competence in a foreign language included in the mathematics curriculum requires intercultural understanding skills (MEB, 2018). Mathematical problems can be used to improve these skills.

Today, Turkey is a country of immigration from different countries. Multiculturalism is a fact of life in today's society. Issues of equity, fairness, and social justice should not be taken for granted in math class (Panthi, 2018). As a result, we must provide an intercultural educational climate. Various cultural aspects should be included in the problems in the mathematics textbook to improve intercultural comprehension.

6. Conclusion and Recommendations

This study was carried out to examine at which level the problems in the fourth grade mathematics textbook published by the Ministry of National Education focus on social issues. Generally speaking, only about four percent of existing problems were found to be related to *Environment*, *Gender Roles*, *Solidarity*, *Saving*, *Healthy Nutrition*, and *Respect for Cultural Values*. In this study, the most common social problems in the sources (e.g., Jacobsen et al., 2012, Evans & Saxe, 1998; Maasz & O'Donoghue, 2011) are discussed. However, *Solidarity* and *Saving* categories emerged spontaneously while reviewing the textbook. Of course, there may be issues other than the ones mentioned here. For example, the difficulties faced by people with disabilities in society and in daily life may be one of them.

The younger generation will face more environmental issues. Addressing environmental issues will contribute to the raising of children as conscious individuals. Environmental issues should be the subject of not only lessons such as life science and science, but also mathematics. As stated before, environmental issues are increasing. Although there are problems with environmental issues, it is insufficient to have only five of these problems. According to these findings, it is recommended to increase the problems related to environmental problems. For this reason, teachers and teacher candidates can also consider different environmental issues such as high energy consumption, ozone layer depletion, environmental pollution, water scarcity, and desertification while posing problems. It is also recommended that students can also be supported with out-of-school activities in raising environmental awareness.

Since textbooks have a massive impact on students, necessary adjustments should be made in the textbooks in terms of gender stereotypes. Gender awareness is critical for children's gender role construction. It is recommended that teachers should teach students how to recognize gender stereotypes. Moreover, teacher education must include a gender viewpoint. In-service training can be given

to teachers to raise awareness because teachers are the main users of course materials.

Solidarity contributes to social cohesion. There are messages about people helping each other in mathematics problems. In addition, there is a benevolence value in the mathematics curriculum. The content of the problems in the mathematics textbook is to help stray animals, to share the books with others, and to help those in need. Such questions can be increased in order to raise the awareness of helping children at a young age. A nursing home can be visited with students for solidarity.

Saving is a situation that we can encounter in every moment of our lives—for example, using resources efficiently at home, comparing the prices of products when we go shopping, purchasing phone tariffs, and using the money for our needs. For children to have conscious spending responsibility, we need to take an instructive role about saving. In mathematics problems, saving is limited to only moneybox problems but teachers can encourage students to have their own moneybox.

School-age children's eating habits are affected by school. Nutrition and mathematics have a lot in common. These are classifying, estimation, communication, conjecturing reasoning, questioning, problem-solving, critical thinking, decision-making, and calculating. There are only two problems about healthy nutrition, so the number of questions about healthy nutrition should be increased. Students should be allowed to think about healthy nutrition. Teachers play a key role in teaching nutrition education at school. While healthy nutrition is included in the life studies course, this subject should be integrated into other disciplines.

While different ethnic origins are intense in foreign countries, it is not that much in Turkey. That's why researchers examined problems in terms of religious/national feasts and different cultures according to different regions. Since there are only five problems related to cultural elements in the mathematics textbook, it has been seen that there is a need to include more problems related to Turkey's cultural elements. In addition, different cultural elements should be included in the problems. Specialists can be invited to the classes, especially for students from different cultures.

Teachers and the materials used in the lesson have a lot of work in raising sensitive people to social problems. Therefore, a course that will add an interdisciplinary perspective that deals with mathematics from a social

perspective can be included in teacher education. Social issues are not adequately addressed in the problems in the 4th-grade mathematics textbook. The variety of the social issues should be increased in books. Moreover, the pictures in the book do not provide enough opportunity for students to think critically. In this study, only 4th-grade textbooks were used, so 1st, 2nd, and 3rd-grade mathematics textbooks can also be examined in the context of sensitivity to social issues. Moreover, future researchers can examine the mathematics textbooks of different countries in terms of sensitivity to social issues.

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CHAPTER 5

MOBILE LEARNING IN LANGUAGE EDUCATION: TRENDS, POTENTIALS, AND CHALLENGES

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1. Introduction

Our life has changed with technological developments in the last decades drastically. Mobile devices have turned to be indispensable tools in our daily life. The widespread use of these devices has brought the issue of using mobile technologies in education as well. Nevertheless, the new generation has grown up into a world where mobile technologies are indispensable tools of their lives, so that they are called digital natives. It is undisputable that this generation needs to be educated with a diverse approach that means with methods and techniques which applies to their interests and needs. In this regard, mobile learning might be one of the methods, which could apply to the new generations' interest as it encompasses the use of mobile technologies.

Nevertheless, with the outbreak of the Covid-19 pandemic the importance of using such methods and techniques seems to be crucial as face-to-face education has been interrupted and institutions were forced to offer distance education to their students. In the literature, mobile learning was of research interest of researchers who were favouring the use of technology in education. Despite the fact that mobile learning has numerous advantages, the implementation in education was dependent on teachers' preferences. In times of pandemic such methods have turned to be crucial, so that it needs to be investigated closer.

1.1. Literature Review

With the widespread use of technological devices their utility in education has been debated in literature widely (Kukulska – Hulme, 2009, Göth & Schwabe, 2012). Mobile learning has emerged out of these discussions. In the literature, it is suggested to use this method in education, as it allows learners to learn without any boundaries, especially of being unlimited of time and space. But what is meant by mobile learning?

In the literature, there are diverse views on the meaning of mobile learning. Kukulska- Hulme (2009, p.158) implies that the diverse views are caused “partly by the rapid evolution of this field and partly because of the ambiguity of the word “mobile” and questions it as “*Does it relate to mobile technologies, or the more general notion of learner mobility?*” Based on this question, it is understood that the definitions of mobile learning in the literature are made in line with the meaning attributed to the concept of mobile. When mobile learning definitions are examined from this point of view, then it is evident that some researchers associate mobile learning with learners’ mobility (Göth & Schwabe, 2012, Kukulska – Hulme & Traxler, 2005) and some with mobile technologies such as mobile phones, tablets, smartphones and multimedia devices (Naismith et al., 2004; Pachler, 2010). It is emphasized that learners are more active and that they have a mobile learning opportunity with portable devices such as mobile phones, tablets, smartphones, and multimedia devices (Kukulska - Hulme & Traxler, 2005).

Although there is no consensus on mobile learning in the literature, it is understood that mobile learning presents a flexible learning opportunity without being connected to a place thanks to the mobile devices used by the learner and this type of learning is called mobile learning. Based on the different definitions in the literature, Zengin, Şengel and Özdemir (2018, p.19) summarize mobile learning as “*learning method, providing access to educational content regardless of a specific location, benefiting from dynamically produced services and communicating with others*”. It is also regarded to be a learning method that “*increases productivity and work performance efficiency*” (Zengin, Şengel & Özdemir, 2018, p.19). Even though it is defined in different ways, mobile learning gains importance in education in terms of providing “*opportunity to learn anytime and anywhere*” (Zengin, Şengel & Özdemir, 2018, p.31).

In the literature, various benefits of mobile learning are mentioned. Among these, benefits such as facilitating communication between learners, accessing

learning material from anywhere, easy access to information, contextual learning and enabling individual learning are counted (Kukulka-Hulme 2006). But what are the benefits of mobile learning in language education? Studies on this subject indicate that mobile learning provides various benefits in language education. These include the ability of students to access original materials everywhere, to engage in learning activities according to their own learning speed, to see and access the topics in context with the rich content offered, and to enrich their language learning experiences using various mobile tools (Shadiev, Hwang, & Huang, 2017).

Therefore, mobile learning in education provides various benefits and is recommended for the use in education. But above all, the Covid-19 pandemic outbreak, which started in 2019 and made face-to-face education sometimes difficult and sometimes impossible, also reveals how important mobile learning is. In previous studies on mobile learning, it was emphasized that in the education of the new generation, it is necessary to act with a different understanding away from the traditional, but its actual use was left to the preference of the instructors. However, the generation, which refers to those born after 2000 and called the generation Z, was born into the digital world (Çetin & Karalar 2016), grew up with mobile technologies and mobile devices have become an indispensable element of their lives. Therefore, it was deemed necessary to educate the new generation with a differentiated education and training approach.

Switching to distance education during the pandemic process caused a sudden transition to mobile learning, albeit compulsory. According to the language education approach that emphasizes interactive education, it has been challenging to provide such an education with the distance education system. Difficulty was encountered in applying communication-oriented teaching methods, which are easily applied in the classroom, on the distance education system. In this context, mobile learning emerges as an application that might support language education through distance education. But, what are the mobile learning applications and their benefits in foreign language education? In which aspects do mobile learning support learning in language education? The answers to these questions can be given based on the findings obtained from researches on this subject. At this point, it will be beneficial to examine the studies on mobile learning in language education, especially in the national field, in terms of guiding the practitioners and researchers.

When the literature is examined, it can be seen that there are many studies examining the research trends regarding mobile learning in Turkey (Güler, 2013; Zengin, Şengel, & Özdemir, 2018; Uygun & Sönmez, 2019; Kavaklı & Yakın, 2019; Korucu & Biçer, 2019; Altunçekiç, 2020; Yıldız, Yıldırım, Akça, Kök, Özer, & Karataş, 2020; Özsarı & Saykılı, 2020). However, in these studies, researches on mobile learning are generally considered, and mobile learning in language teaching in particular is not included. Hence, it can be seen that there is a need for studies addressing the research trends in researches on mobile learning in language education in Turkey.

1.2. Purpose of the Study

The purpose of this study is to examine the researches on mobile learning in language education in Turkey, to identify research trends and to offer suggestions to practitioners and educators with the findings obtained.

For this purpose, answers to the following research questions are sought:

1. What is the purpose of the studies on mobile learning in language education in Turkey?
2. What are the main findings of the studies on mobile learning in language education in Turkey?
3. What are the sample and target foreign languages according to the research subjects of the studies on mobile learning in language education in Turkey?
4. What are the research methods, data collection tools and data analysis techniques of the studies on mobile learning in language education in Turkey?

2. Method

In this study it is aimed to explore research trends on mobile learning in language education in Turkish educational context. With this aim, a total of 42 studies are examined. Out of these studies, 22 are thesis and 20 research articles. In the study, document analysis method is used. Researches related to mobile learning in language education are explored in terms of purpose, sample, target language, method, and main findings.

2.1. Search Parameters

A systematic literature review was carried out to determine and synthesize the current empirical research on mobile learning in language education. First,

relevant studies were defined and inclusion/ exclusion criteria identified. Second, potential studies were searched. In line of inclusion/ exclusion criteria, the studies were determined. Then, the included studies were analysed and findings synthesized. The electronic databases searched in this review included Education Resource Information Center (ERIC), EBSCO, Google Scholar, and Turkish Higher Education Council Thesis databases. In addition, the bibliographies of these articles as well as those of literature reviews were searched for related articles. The databases were searched and by reading the title and abstracts relevant studies were identified. Search terms included those used to mobile learning in foreign language teaching and learning such as language education, language teaching, foreign language, language learning, mobile learning, and m-learning. Studies were not included, if they were not empirical studies in peer-reviewed journals or on thesis databases, and not about mobile learning and language education in Turkish educational context. Moreover, studies were screened to ensure that the analysis included at least one qualitative or quantitative approach. Further, studies were not included, if the full text were not in English, German or Turkish. After this procedure, 42 studies were fitting the criteria and were analysed in the review.

2.2. Data Analysis

Firstly, descriptive statistics were used to determine the general characteristics of the studies in respect of format of the studies, purpose, participants, grade level, research method, and main findings. Content analysis method was conducted to reveal the main topics, purposes and findings of the related studies on foreign language education. In order to obtain reliability and validity in the study, the researcher and an expert analyzed the studies according to the selected criteria separately and compared their findings. Differentiation in the findings were revised.

3. Results

3.1. Results on Research Topics

When the researches on mobile learning in language education are examined, then it is evident that most of the studies are exploring the effects of mobile learning on vocabulary acquisition and word knowledge. With this aim, 7 research articles out of 20 and 7 master and 4 doctoral theses out of 22 theses are

investigating this topic. When these studies are examined closely, it is evident that they explore mobile learning and its effect on vocabulary acquisition from diverse perspectives. In this regard, effectiveness (Bakay 2017; Atay 2020, Korkmaz, 2010), effect (Çelik 2018), the effect of vocabulary learning applications on word knowledge (Aygül 2019, Gürkan 2018), the use of tablets and its effect on vocabulary learning (Doğan, 2017), the effect of vocabulary applications on vocabulary learning (Zengin Ünal 2015, Tanır 2018), the use of mobile and printed dictionaries (Ofiaz 2019), the use of mobile dictionaries and its effect on vocabulary acquisition (Aslan 2016, Çelik 2012), and developing an application for visually impaired learners for vocabulary learning and its effect on vocabulary learning (Gül, Kamalı, Yasan, Yurdağül, & Yıldırım 2018) are among research topics. Furthermore, teaching vocabulary by using short messages and its effect on vocabulary learning (Çavuş & İbrahim 2009), the use of mobile phones and its effect on vocabulary learning (Tokdemir, Kul, Zibande, & Dilek 2013), and the use of multimedia messages and its effect on vocabulary learning (Saran & Seferoğlu 2010) are studies exploring mobile learning related to vocabulary learning. The role of multimedia glosses on listening comprehension and incidental vocabulary learning in a mobile environment (Çakmak, 2014), and mobile - assisted language learning and its effect on prospective English language teachers' vocabulary learning, learner autonomy and motivation (Okumuş Dağdeler 2018) are further research topics of the studies.

Furthermore, researches on mobile learning in language education are examining the effects of mobile learning on academic achievement (Özer 2017), attitude (Demirer 2017, Güven 2019), perception (Ataş 2014; Aygül 2019), teachers' readiness (İlçi 2014), the effect on writing skills (Noyan 2017), the effect on autonomous learning (Karakaş & Kartal 2020), the effect on collocation learning (Okumuş Dağdeler, Koca, & Demiröz 2020), and the effects of using mobile instant messaging application, WhatsApp, on language proficiency (Avcı 2016). The use of podcasts and its effect on speaking, listening strategy and critical thinking along with the effect on listening skill (Şendağ, Gedik, Caner, & Toker, 2017), the use of podcast and its effect on listening skills (Tahir 2019, Şendağ, Gedik, Caner, & Toker 2019), the effect on pronunciation (Saran, Seferoğlu, & Çağıltay 2009), and the effect on speaking skills (Öztürk 2019) are among research topics.

In addition, taking the opinions of English teacher candidates about the use of mobile phones in language teaching (Çakır 2015), teaching idioms through

mobile learning and its effect on learning (Gümüő, Kavanoz, & Yılmaz 2017), the effect of the mobile game SOS on students' attitudes and motivations towards mobile learning (Önal, Çevik, & Őenol 2019), the adaptation of a measurement tool to Turkish to measure the attitude towards mobile learning (Önal & Önal 2019) are also investigated. In addition, mobile application examples (Yıldırım 2012, Büyükbeőe 2019, Tılıő 2016, Sözeri & Harmanőah 2019), and mobile application development (Han & Tecim 2019) stand out as research topics.

3.2. Results on the Main Findings

When the main findings obtained from studies on mobile learning and vocabulary teaching are examined, it is evident that mobile learning applications have a positive effect on vocabulary learning success and academic success (Bakay 2017, Atay 2020, Aygöl 2019, Çelik 2018, Tanır 2018, Zengin Ünal 2015, Özer 2017). Students learn new words while continuing their daily lives away from the classroom while learning words with mobile learning (Çavuş & İbrahim, 2009). Moreover, it is found to be interesting and facilitating learning (Saran & Seferođlu 2010), effective, motivating, and useful (Gürkan 2018). It has been also observed that the use of tablets has a positive effect on vocabulary learning success (Dođan 2017). It was also understood that mobile learning applications have a positive effect on learning vocabulary and students have a positive attitude towards learning words with mobile phones (Tokdemir Demirel, Kul, Zibande, & Dilek 2013). It is also emphasized that the mobile application that is developed for learning vocabulary is effective and facilitating the learning of visually impaired (Göl, Kamalı, Yasan, Yurdagöl, & Yıldırım 2018).

In studies examining the effect of mobile dictionary use on vocabulary learning, it was found that mobile dictionaries were easily accessible and useful for users, but their content was evaluated as partially sufficient. The need for the Internet connection and the inability to see the content in a holistic way were also evaluated negatively (Aslan 2016). Quick access to words and ease of use of mobile dictionaries were found to be positive, but vocabulary was evaluated as partially sufficient (Ofiaz 2019). Çelik (2012) found that it saves time for learners, reduces teacher dependence, and increases individual learning speed. However, it is emphasized that technical problems, which might occur, affect the participants negatively.

In collocation teaching, it is stated that the use of mobile applications is only effective in learning receptive words, but does not make any differences

in terms of productivity (Okumuş Dağdeler et al.2020). Gümüş et al. (2017), on the other hand, reveal in their study that mobile environment and face-to-face environment does not make any significant differences on the achievement and permanence scores of students in teaching English idioms, but students' experiences towards the mobile environment are positive.

Further, Okumuş Dağdeler (2018) reveals that mobile applications do not affect the autonomous learning situations and productive vocabulary skills of the participants. Noyan (2017) also found that mobile application usage does not make any significant differences in writing skills. It is stated that instructors are concerned about the use of mobile applications in foreign language education, but students have a positive attitude towards it (Demirer 2017). It is also understood that prospective English language teachers had a positive attitude towards the use of mobile applications in language classes (Içli 2014; Güven 2019).

Findings obtained in studies examining the effect of mobile learning on listening skills show that students overcome their fear of listening and are interested in working with podcast listening files (Tahir 2019). Şendağ et al. (2017) found that listening to mobile-intensive podcasts did not make any significant differences in increasing listening comprehension, speaking, critical thinking skills, critical thinking dispositions and listening strategy use of the participants. In another study conducted by Şendağ et al. (2019), instructor-centred intensive listening was found to be more positive than mobile comprehensive listening in improving the listening skills of the participants. However, it was determined that there were no significant differences between the groups in terms of speaking, critical thinking, and listening strategies.

The findings obtained in the further studies can be summarized as follows: It is stated that prospective English language teachers have a positive opinion on the use of mobile phones in language teaching and they want to use them also in their future classes (Çakır 2015), and that the use of mobile phones in language teaching has a positive effect on learning pronunciation (Saran, Seferoğlu, & Çağiltay, 2009). It is seen that the use of mobile game called SOS with a sample application in language teaching increases the motivation of students and creates a positive attitude towards mobile learning (Önal et al. 2019). Karakaş and Kartal (2020) emphasize that prospective foreign language teachers need more comprehensive courses related to the use of technology in education.

3.3. *Results on Target Language and Sample*

When the researches are examined in terms of target language, then it is evident that just one research is related to the French language and three to German language (Tanır, 2018; Tahir, 2019; Oflaz, 2019), which are taught mainly as second foreign languages at schools in Turkey. The others are related to mobile learning in English language education.

The participants of the studies according to school type are as follows: In the studies mobil – assisted language learning (Yıldırım 2012), teaching idioms by using mobile learning and its effect on learning (Gümüş, Kavanoz, & Yılmaz 2017), the use of tablets and its effects on word knowledge (Doğan 2017), vocabulary teaching through mobile learning (Gürkan 2018), and the use of mobile learning to develop speaking skills (Öztürk 2019) are the participants K-12 students.

The effect of mobile learning on vocabulary development (Saran & Seferoğlu 2010; Tokdemir Demirel, Kul, Zibande, & Dilek 2013; Bakay, 2017; Oflaz 2019; Atay 2020), the use of podcast and its effect on listening skill (Tahir 2019), the effect on pronunciation (Saran, Seferoğlu, & Çağıltay 2009), the effect on attitude and motivation (Önal, Çevik, & Şenol 2019), and the effects of using mobile instant messaging application, WhatsApp, on language proficiency (Avcı 2016) are conducted with foreign language preparatory class students. Effectiveness of mobile learning (Korkmaz 2010), the effect of mobile learning on academic achievement (Özer 2017), the effect of using mobile wordbooks on vocabulary learning success (Zengin Ünal 2015), the effect of mobile learning on students' vocabulary learning in English teaching (Çelik 2012) was also carried out with foreign language preparatory class students. Demirer (2017) had also examined the attitudes towards mobile learning of School of Foreign Languages instructors.

Prospective foreign language teachers were further participants of the studies. Vocabulary development with mobile learning was conducted with prospective German language teachers (Tanır 2018). The effect of mobile assisted learning on collocation learning in English (Okumuş Dağdeler, Koca, & Demiröz 2020), the effect of mobile learning applications on autonomous learning (Karakaş & Kartal 2020), the effect of podcast use on listening skills (Şendağ, Gedik, Caner, & Toker 2017; Şendağ, Gedik, Caner, & Toker 2019), obtaining opinions on the use of mobile phones in language teaching (Çakır

2015), learner autonomy and motivation (Okumuş Dağdeler 2018), attitude towards mobile learning, and perception towards mobile learning (Güven 2019) were conducted with prospective English language teachers. Güven (2019) examined the perception of English teachers towards mobile learning along with prospective English language teachers. İlçi (2014), on the other hand, examined the readiness of education faculty students towards mobile learning. Among these were also prospective English language teachers. Aygül (2019) explored the perception of mobile learning with the participation of prospective English language teachers.

At tertiary level, researches were conducted with various undergraduate program students. Ataş (2014) investigated the perception of mobile learning with computer program undergraduate students, and Çavuş and Doğan (2009) examined developing vocabulary knowledge with mobile learning. Vocabulary development with mobile learning was researched with the participation of German, French and English translation undergraduate program students (Aslan 2016). In the adaptation of a measurement tool that measures attitudes towards mobile learning in English into Turkish (Önal & Önal 2019), the participants were undergraduate students. Çakmak (2014), on the other hand, examined the role of multimedia explanatory notes in a mobile environment on listening comprehension in a second language and learning random vocabulary with public administration and business undergraduate program students. Noyan (2017) investigated the effect of mobile learning on writing skills with sociology undergraduate students.

Apart from the samples K-12 and tertiary level students, there were also studies with diverse participants. Developing vocabulary with mobile learning was conducted with the visually impaired (Gül, Kamalı, Yasan, Yurdagül, & Yıldırım 2018), and in the Duolingo example, mobile learning research was conducted with adults and students from various professional groups, whose participants were between 13 and 60 years old (Tılıç 2016).

3.4. Results on Research Methods, Data Collection Tools, and Data Analysis

When the researches are examined in terms of research methods it is found that mixed - method (n=19), quantitative (n=13) and qualitative (n=5) methods were used to explore mobile learning in language education. Among the studies were 16 researches quasi-experimental with using pre- and post-test. As data

collection tools questionnaires (n=17), tests (n=17), scales (n=8), interview forms (n=12) and observation forms (n=2) were used. Data were analysed by content analysis (n=15), descriptive analysis method (n=19), and inferential statistics (n=14).

4. Discussion, Conclusion and Recommendations

4.1. Discussion, Conclusion and Recommendations on the First Research Question

The first research question of the study was “What is the research purpose of the studies on mobile learning in language education in Turkey?” The findings obtained from the study carried out to answer this question show that the most researched subject was the effect of mobile learning on the development of vocabulary. Of the 46 studies reviewed, 18 addressed this issue. In the second place, the effect of mobile learning on academic achievement was conducted with five studies and mobile learning applications also with five studies. Three studies deal with the effect of mobile learning on the development of listening skills, and three studies examine attitudes towards mobile learning. The effect of mobile learning on writing skills and pronunciation, opinion, perception, readiness, effectiveness in language education and autonomous learning are examined each in one study.

The results revealed that the most explored topic is the impact of mobile learning on vocabulary acquisition. Out of 42 researches 18 are examining this issue. Besides vocabulary acquisition, learners’ attitude towards mobile learning, the effect of mobile learning on listening comprehension, the impact on academic achievement, effectiveness, instructors’ attitudes, the effects of using mobile dictionaries in language education, the use of mobile phones are among research topics.

When studies on mobile learning in language teaching are evaluated in terms of research topic, it can be seen that mobile learning is mostly associated with vocabulary learning. However, it can be inferred that mobile learning may have an impact on the development of diverse skills and its effect on these needs to be investigated. It can be recommended to examine topics such as speaking, writing, listening comprehension and grammar. Furthermore, it is recommended to investigate the effect of different mobile applications on the development of various linguistic skills.

4.2. Discussion, Conclusion and Recommendations on the Second Research Question

The second research question of the study was “What are the main findings of the studies on mobile learning in language education in Turkey?” The study shows that various benefits of mobile learning in language education have been revealed by researches. Among these are that it has a positive effect on vocabulary development and academic achievement (Bakay 2017, Atay 2020, Aygül 2019, Çelik 2018, Tanır 2018, Zengin Ünal 2015, Özer 2017). Moreover, students have a positive attitude towards this type of teaching and it facilitates learning (Tokdemir, Kul, Zibande, & Dilek 2013).

However, despite these positive findings, the negative aspects of mobile learning are also emphasized. Among these, there is a negative effect of technical problems on learning (Çelik 2012). Nevertheless, it can also be seen that mobile learning is not always evaluated as positive compared to face-to-face learning. Among these, the fact that mobile learning does not make any significant differences in teaching collocation and idioms and improving writing skills can be given as an example (Okumuş Dağdeler et al. 2020, Gümüş, Kavanoz, & Yılmaz 2017, Noyan 2017). Şendağ et al. (2017) also found that listening to mobile-intensive podcasts does not make any significant differences in increasing listening comprehension, speaking and critical thinking skills. Therefore, education through mobile learning in language education does not necessarily make a difference compared to face-to-face education, but its use might contribute to a differentiated learning environment.

4.3. Discussion, Conclusion and Recommendations on the Third Research Question

The results obtained from the study carried out to find the answer to the question “What are the sample and target foreign languages according to research topics of the studies on mobile learning in language education in Turkey?” revealed that studies in foreign languages except of English language were underrepresented. Out of the 42 examined studies just three were related to German language.

This issue is also highlighted in the literature and it is stated that the studies conducted in the field of language education on mobile learning are more related to English language education (Kukulska - Hulme 2019, Zengin, Şengel, & Özdemir 2018). Therefore, it is understood that there is a need for

studies on mobile learning in other foreign languages such as German, French or Spanish. In the example of the German language, researches on the teaching of language-specific structures through mobile learning can be conducted. An in-depth examination of mobile learning on language-specific structures might give evidence on its applicability and utility in German language education.

When the samples of the studies on mobile learning are examined, it can be seen that there are few studies conducted with K-12 students. A great amount of studies are conducted with students attending foreign language preparatory classes at the School of Foreign Languages. At tertiary level, students of sociology, computer, translation and education faculty programs were participants of the studies. But most studies were conducted with pre-service English language teachers. Hence, it can be recommended to conduct studies with samples, which are underrepresented in the researches such as K-12 students.

4.4. Discussion, Conclusion and Recommendations on the Fourth Research Question

“What are the research methods, data collection tools and data analysis techniques of the studies on mobile learning in language education in Turkey?” In the examination carried out to answer the question, it can be seen that the most used method in the researches is the mixed method, and questionnaires and tests are used as data collection tools. In data analysis, descriptive analysis method was mostly used. The diversification of research methods and techniques in studies is important, as it allows examining the research subject from diverse perspectives. Therefore, it is recommended to apply various methods and techniques in researches on mobile learning in language education.

It is hoped that the findings obtained in this study, which was carried out in order to determine the research trends of researches on mobile learning in language education in Turkey, might provide information to researchers and practitioners and shed light on new studies and practices.

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CHAPTER 6

EXAMINING FOREIGN LANGUAGE CURRICULA FOR UPPER SECONDARY SCHOOLS: DIFFERENT LANGUAGES- DIFFERENT PROGRAMMES?

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1. Introduction

The process of globalisation with its developments in technology, communication and transportation resulting in stronger international economic, political and cultural relationships has increased the significance of the learning of English as an international language (Marlina, 2014; Xu, 2018). This need has also been widely recognized in the Turkish context (Baş, 2013; Çelebi, 2006; Doğan, 2008; Gömleksiz & Elaldı, 2011), as English is the most frequently taught foreign language at Turkish schools (Ökmen & Kılıç, 2016). However, there is also the need to promote the learning of additional foreign languages to address linguistic diversity, to foster tolerance and mutual understanding, to enable workers to get access to a variety of labour

markets and to strengthen the position of academic institutions in a competitive international context (Er & Hertsch, 2019; King, 2017; Tsiplakides, 2017). In this vein, internationally operating companies in Turkey expect workers to be proficient in at least one more foreign language other than English (Çevik et al., 2020; Doğan & Tuncer, 2018; Kara et al., 2017; Yücel & Arıkan, 2019), and competence in more than one foreign language is accepted as a sign of modernity and development (Doğan, 2008; Özer & Korkmaz, 2016).

These developments issue great demands on policy makers and educational institutions to provide a foreign language education that considers the importance of teaching more than one foreign language. To meet these demands, a foreign language policy is required that seeks to achieve standards in, for example, selection of suitable materials and teaching methods, equipment of schools or language teacher education to reach intended learning outcomes that usually mark the starting point in curriculum development based on backward design (Richards, 2017, p. 16). To establish coherent instructional programmes, learning objectives, instructional strategies and assessment need to be coordinated, and supportive conditions need to be created by learner mentoring, involvement of parents, professional development provided for teachers and allocation of resources (Newman et al., 2001). Curricula play a significant role to achieve intended learning outcomes as they establish a framework encompassing syllabus design (the content and the order in which the content is taught), methodology (practices and procedures used and underlying principles and beliefs) and evaluation (assessment of programme outcomes and learner improvement) (Nunan, 2015; Richards, 2017).

Research conducted in various local contexts and educational domains has emphasised the importance of national curriculum policies to achieve programme coherence and to integrate 21st century competences (e.g., Barrot, 2019; Gleeson et al, 2020; Schmidt et al. 2005; Voogt & Roblin, 2012). However, research has not focused on the question to what extent national foreign language curricula for different languages display consistency so that the teaching and learning of different foreign languages in the same country is likely to produce comparable results that satisfy the need of educating multilingual language learners. Taking the case of Turkey, the current study seeks to address this research gap by examining the English, French and German curricula for upper secondary schools in terms of objectives, content, methods and assessment. This does not mean that the three curricula are expected to be identical given

the linguistic peculiarities of the languages, the status of the languages in the Turkish school system and different pathways followed in the respective foreign language pedagogies. Nevertheless, a comparison is believed to be conducive to spotting areas of improvement by identifying the strengths and weaknesses of the curricula examined.

1.1. The Review of Literature

In Turkey, foreign languages are learned in formal instruction in accordance with state curricula as well as in informal contexts such as private language schools, distance learning (Adıyaman, 2002) and online language courses (Şahenk, 2009; Tılıç, 2016). Since the 1950s, English has become the foreign language primarily taught in Turkish public schools, followed by German and French (Köksal & Ulum, 2018). Foreign languages are learnt for different purposes such as enjoyment, financial and moral benefits, career progression and furthering higher education (Acat & Demiral, 2002; Arı, 2018), and the Ministry of National Education (MoNE) states in official documents that instruction aims at providing individuals with the opportunity to compare their cultures with those of other countries, and to become open-minded individuals with good communication skills who think universally, value multiculturalism and respect differences (MoNE, 2018a, b, c).

Since 1997, several educational reforms in Turkey have reshaped formal instruction leading into a 4+4+4 system with twelve-year compulsory education (four years primary school, four years secondary school and four years upper secondary school) (European Commission/EACEA/Eurydice, 2020, p. 35; Gürsoy et al., 2017). Throughout the reform steps, foreign language curricula were modified (Asmali, 2020; Er & Hertsch, 2019; Erarslan, 2018) and teacher education programmes were accommodated (Köksal & Ulum, 2018). The most recent revision of foreign language curricula was undergone in 2018 for English (MoNE, 2018c), French (MoNE, 2018b) and German (MoNE, 2018a). In the revised curricula, four class hours per week for the primary foreign language and two class hours for the secondary foreign language are allocated in upper secondary schools with no special focus on language learning. In upper secondary schools with preparatory classes (Anatolian High Schools and Social Sciences High Schools), primary and secondary foreign languages are taught 20 hours and 4 hours per week, respectively.

Well documented for English language teaching, the reforms starting at the end of the 20th century aimed at extending the duration of English instruction in state schools and utilising communicative language teaching as the instructional method in order to enable learners to engage in international communication (Erarslan, 2018; Gürsoy et al, 2017; Kırkgöz, 2008, 2009; Kırkgöz et al., 2016). In spite of these attempts to develop curricula that address the challenge of providing learners with 21st century competences, research indicates a variety of problems. Most strikingly, Turkish language learners show chronically low proficiency in the target language (Asmalı, 2020; Coşkun, 2008; Demirpolat, 2015; Gömleksiz & Elaldı, 2011; Haznedar, 2010; Özer & Korkmaz, 2016). With an awareness of curricular improvements, curricula are perceived inflexible and forcing teachers to follow them more closely compared to other countries (Aslan, 2016; Erdem, 2009), and it is reported that content, materials and methods proposed in the curricula are perceived incoherent and difficult to adapt in different school environments (Batdı, 2017; Erarslan, 2018; Kılınç, 2016; Kurt, 2017; Merter et al., 2012; Ocak et al., 2013). Additionally, curriculum changes have been described as challenging because teachers are insufficiently prepared to implement them (Altan, 2017; Erarslan, 2018; Kalaycı & Baysal, 2019), which seems an explicit obstacle for the teaching of English to young learners (Aksoy et al., 2018; Gürsoy et al., 2017). A further point made is that assessment is not in line with communicative objectives stated in the curricula (Erarslan, 2018; Ocak et al., 2013; Sarıgöz & Fişne, 2018). Pointing to a weakness of the teaching of French at Turkish Kuşçu (2012) asserts that instructional practice is more concerned with following the curriculum or the coursebook as the script rather than generating learning opportunities. The author calls for the removal of unnecessary content, a more effective establishment of goals and achievements along with learner-centred teaching methods and assessment procedures. These results were confirmed in a follow-up study on the 5th grade French curriculum (Kuşçu et al., 2012). Analysing the A1.1 and A1.2 level language objectives of the most recent secondary French curriculum, Karagül and Oral (2020) have shown that the objectives are mostly constructed based on lower-level thinking and lower-level knowledge dimensions and not distributed homogeneously, so that the development of creative thinking and problem-solving skills is not adequately considered. Similar concerns are reported in the studies exploring the teaching of German as a foreign language in Turkey. From a historical perspective, Genç (2003) noted that the programs were insufficient and the desired efficiency could

not be achieved although they were revised over time. Based on teacher reports, Kırmızı (2009) sees the need for curriculum revision by rearranging content, increasing class hours and providing professional development to support teachers in computer-assisted teaching and material preparation to benefit from digital tools. In a recent study, Tuzcuoğlu-Bülbül and Sakız (2020) call for a modification of the German curriculum by developing content and methods based on flexibility, inclusiveness and diversity to overcome the weakness of the existing curriculum which includes standard methods and expectations irrespective of the learner needs and preferences identified in the practice of German as a foreign language at Turkish schools.

1.2. Significance of the Research

While the analysis of foreign language curricula is a well-established research area, little attention has been paid to a comparison of foreign language curricula in the same school system or country. Such an examination is apparently important given the need to educate multilinguals rather than bilinguals having command over their mother tongue and one foreign language, usually English. Stated differently, learners of any of these languages should be equipped with comparable linguistic competences given they have reached the same proficiency level. A further motivation for the current study was to provide a base for the development of mutually informed curricula to enhance and maintain validated quality criteria for teaching and learning in upper secondary education (Eurydice, 2021; cf. European Schools, 2012, p. 2).

Guided by the research interest to explore in how far the Turkish upper secondary school curricula for English (MoNE, 2018c), French (MoNE, 2018b) and German (MoNE, 2018a) differ in terms of goals and objectives, content, teaching and learning processes and assessment as significant components of curricula, this study sought to answer the following research questions:

1. To what extent do English, French and German curricula for upper secondary education differ in goals and objectives?
2. To what extent do English, French and German curricula for upper secondary education differ in content?
3. To what extent do English, French and German curricula for upper secondary education differ in suggested characteristics of teaching and learning processes?

4. To what extent do English, French and German curricula for upper secondary education differ in suggested approaches to assessment and evaluation?

2. Method

Document analysis was employed in the current study in order to compare the three foreign language curricula. Document analysis is an approach of analysing recorded materials about events and facts (Bowen, 2009). Document is often used as an umbrella term to refer to a wide range of written, visual, digital, and physical material relevant to the study (including visual images) (Merriam & Tisdell, 2015). In educational research, document analysis is often employed when textbooks and curricula are considered as data sources (Yıldırım & Şimşek, 2011). It has been established as a validated method with an array of procedures and techniques to identify and analyse documents in order to extract their meaning and evaluate their significance (Altheide & Schneider, 2013). Informed by studies employing similar research strategies (e.g., Pinto et al., 2012), the study additionally employed procedures suggested in constant comparative analysis (Glaser & Strauss, 1967) including repeated document examination and inductive coding to reach higher levels of abstraction that would allow the comparison of curriculum components inherent in the curricula scrutinised. A detailed account of the data, the researchers and the steps in the data analysis are given in the following section.

2.1. Data Collection

The data for the current study were constituted by the curricula for the teaching of English (MoNE, 2018c), French (MoNE, 2018b) and German (MoNE, 2018a) as foreign languages at Turkish upper secondary schools (Grades 9-12; terminology following Eurydice, 2021). The curricula are available on the official website of MoNE. The curricula entered into force on 19 January 2018 and were put into practice in upper secondary schools from the following academic year onwards. The documents comprise of 69, 83 and 86 pages for the English, French and German curricula, respectively and they are written in the target languages with the exception of the first twenty pages of the French curriculum and explanations of the syllabi in the English curriculum. While the curricula share the same content (objectives, approaches, descriptors of competences and skills to be acquired, syllabi, materials, assessment and evaluation), the content is organised in different order in the documents.

2.2. *The Researchers' Roles*

In order to conduct the current study three researchers engaged in the data analysis, the presentation of findings and discussion. Since the documents were written in three different languages, an initial distribution of tasks was organised. The first researcher (first language: Turkish), a proficient speaker of English and French, analysed the English and French curricula. The third researcher (first language: German, proficient speaker of English and Turkish) analysed the curriculum for German. Besides their linguistic proficiency, the two researchers hold a PhD degree in English language teaching, and are assigned the task of giving field-specific courses to pre-service teachers of English as a foreign language as members of the faculty of education. The first researcher has long-time experience in the teaching of English as a foreign language, and the third researcher has taught English and German in tertiary education in Turkey for more than twenty years. The second researcher gives lectures on curriculum design, teaching methods and principles and research methods at the same institution. Against the backdrop of the qualifications and experiences of the researchers, it was assumed that they had both sufficient familiarity with the context and the required expertise in analysing and interpreting the documents related to the research subject. Pointing to the researchers' roles and backgrounds it should be acknowledged that the researchers were aware of their assumptions, values and perspectives, which were addressed in regular meetings throughout the study in order not to threaten the reliability and validity of the analysis (cf. Karppinen & Moe, 2012).

2.3. *Data Analysis*

The data analysis started with reading through the documents to get familiarised with the data. Then, the content of the curricula was coded using English codes and memos containing operational definitions regarding the curriculum components (i) goals and objectives, (ii) content, (iii) teaching and learning process, and (iv) assessment and evaluation, which served as the key areas of analysis (cf. Wach et al., 2013). To facilitate the comparative analysis, preliminary codes together with original passages or paraphrases closely related to the original data were tabulated in separate matrices for the key analysis areas so that the researchers would understand if a code was present in all curricula. The decision to relate the codes to original passages or paraphrases was guided by the consideration to more accurately identify consistencies or inconsistencies among the curricula by enhancing the visibility of comparable components in the curricula. For

example, the analysis revealed that all curricula contained aims related to cultural awareness and intercultural competence. The researchers' analysis reports read:

*In order **to share their ideas and culture with other people from different cultures and countries**, the learners need to use English actively, productively, and communicatively* (curriculum for English).

***intercultural communication** skills appropriate for their mental development levels* (curriculum for French).

*Students will be able to develop “linguistic openness of the target language”, to reflect on and analyse the language, **to detect the cultural aspects of the target language*** (curriculum for German).

The phrases in bold were initially coded as cultural awareness and intercultural competence, and later subsumed under the code cultural competence as an outcome of the negotiations among the researchers. The collaboration of the researchers at these stages of data analysis, which also included repeated inspection of the documents in case of need for clarification, targeted at enhancing the validity and reliability of the whole analysis process.

The developed codes with explanatory power were then allocated to themes that provided the framework for the presentation of the findings in the Results section. For example, the codes concerning the teaching and learning processes were allocated to general principles, teacher roles, learner roles and techniques (encompassing materials and activities). The researchers were guided by their content knowledge of foreign language teaching and learning and familiarity with distinctions and perspectives in the scholarly literature to describe and classify components of foreign language teaching (e.g. for teaching and learning processes: Larsen-Freeman & Anderson, 2013). A specific point of reference was selected for the analysis of the thematic units in the syllabi for the grades 9-12. To compare the distribution of themes covered in the school semesters, they were categorised in terms of domains of language use as proposed in the Common European Framework of References for Languages (CEFR) (CoE, 2001, pp. 48-49). This and all coding procedures encompassing allocating codes to themes aimed at arriving at more abstract data representations to facilitate the comparison of the curricula components analysed.

3. Results

This section reports on the results of the comparative analysis of the three curricula. Guided by the sequence of the research questions, stated goals and

objectives, scheduled content, guidelines about the teaching and learning process and assessment specifications are presented in separate sections.

3.1. Goals and Objectives

The comparison of the curricula showed that they contained aims directed to seven areas. However, not every area is covered in every curriculum. The results are summarised in Table 1.

Table 1: Goals and Objectives Covered in the Curricula

	English	French	German
Communicative language competence	✓	✓	✓
Critical thinking	✓	✓	✓
Cultural competence	✓	✓	✓
Awareness of significance of target language learning	✓	✓	
Learning competence	✓	✓	
Preparation for contact		✓	✓
Digital literacy		✓	

Because all curricula are based on the CEFR, it is not surprising that communicative language competence is formulated as the overarching aim of foreign language instruction. This encompasses the integration of the skills of speaking, listening, reading and writing with a focus on oral communication. Linguistic (i.e. the knowledge of the structure of a language), sociolinguistic competence (i.e. knowledge of how to use language in different situations) and pragmatic competence (i.e. knowledge of the functional use to convey messages) are considered in all curricula. It is foreseen that learners will reach the Level B2+ (in English) and B2.2 (in French and German) at the end of the 12th grade (the same levels according to CEFR, 2001, p. 32). The curricula differ in that the level A1 is reached over one school semester in English, but in two semesters in French and German; the B levels are stretched over five semesters in the English curriculum, while they take four semesters in French and German.

Besides language related objectives, the curricula also emphasise the need to develop critical thinking skills in learners. For example, the German curriculum states that learners need to be able to access, process and evaluate information, to solve problems and to make decisions by thinking critically and analytically

(MoNE, 2018a, p. 4), and the English curriculum expects learners to gain an attitude of questioning (MoNE, 2018c, p. 5). Another common aim established in the three curricula is cultural competence. In the French curriculum, this aim is explicated by stating that learners should gain a better and deeper insight into the lifestyle, mindset and cultural heritage of the people living in other countries, and to transmit their own cultural values to them (MoNE, 2018b, p. 5). While the German curriculum does not explicitly refer to the goal of language teaching as an opportunity to learn and to become aware of the significance of language learning, the English curriculum does not point to the aim of preparing learners for language use in countries where the target language is spoken. Only the French curriculum formulates the objective of enabling learners to gain media literacy and to actively use technology.

3.2. Content

The three curricula include a variety of themes ranging from education, health, art, culture and sport to history, technology, nature and climate change to be covered in upper secondary schools. The English curriculum assigns five content items per school semester while the French and German curricula assign eight for Grade 9/first and second semester (henceforth 9/1 and 9/2), six for 10/1, 10/2 and 11/1, and seven for 11/2, 12/1 and 12/2. While some themes appear in all curricula, it is noteworthy that they are often not covered in the same school semester. For example, sport is covered in 11/2 in the English curriculum, in 9/1 and 9/2 in the French curriculum, and in 10/1 in the German curriculum. Some topics are covered in only one curriculum without apparent equivalence in the other curricula (e.g. inspirational people in the English curriculum, design in the French curriculum and saving money in the German curriculum). Probably due to the lower number of themes in the English curriculum, themes are generally labelled with rather general names (e.g. travel, movies), while the French and German curricula contain more concrete themes such as our country and the world (in the French curriculum) or commercials and consumption (in the German curriculum). Moreover, the German curriculum contains a language-specific topic (the German-speaking countries) to be covered in 11/1. The analysis furthermore showed that themes that explicitly address contemporary issues are rather underrepresented. Table 2 gives an overview.

Table 2: Curriculum content covering contemporary issues

English	French	German
Emergency and health problems	Science and technology (in three school semesters)	Technology
Television and social media	Security (in two school semesters)	Technology today
Digital area	Our world	Traffic and mobility
Future jobs		Climate change
Alternative energy		Innovations

Table 2 shows that a technological reference dominates the 21st century topics. However, it should be noted that contemporary issues may also be covered in content denoted with more general names (e.g. communication in the French curriculum). From a more general perspective, the curricula also differ when the themes are categorised according to the domains of language use (cf. the Method section of this paper). The distribution of domains is shown in Figure 1.

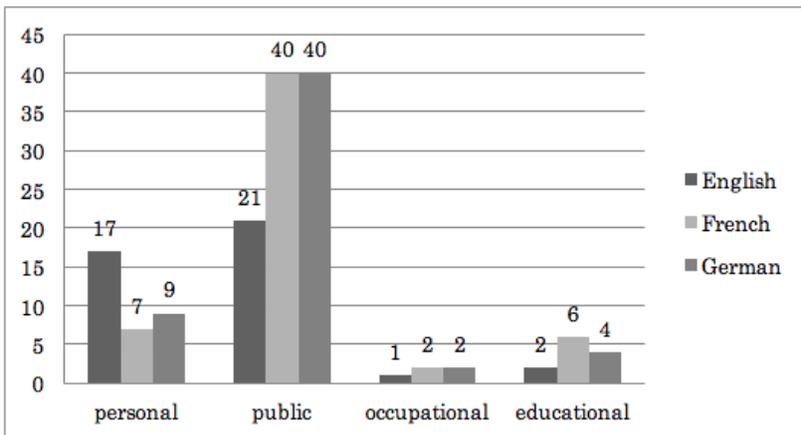


Figure 1: Distribution of Curriculum Content in Domains of Language Use

Figure 1 shows that the content covered in the English curriculum is far more often related to the personal domain compared to the other curricula. Also, the personal domain is nearly as frequently addressed as the public, while themes belonging to the public domain dominate the French and German curricula. Educational themes are considered to greater extent in the French curriculum.

3.3. Teaching and Learning Processes

The document analysis revealed that the curricula contained information that was classified under four themes: (i) general principles, (ii) teacher roles and tasks, (iii) learner roles and (iv) materials and activities.

All languages are to be taught following a communicative language teaching approach encompassing the integration of the four language skills of speaking, listening, writing and reading. However, the English curriculum allows a variety of methods and explicitly encourages teachers to utilise task-based teaching (a form of communicative language teaching). Pointing into a direction away from communicative approaches, the German curriculum postulates the need to develop the linguistic competence of language learners systematically. However, in spite of this focus on the teaching of language as system (not as a communicative tool), the German curriculum also stresses the need to teach German for and through communication and to teach grammar contextualised without organising instructional practice grammar-based.

In terms of teaching principles not specifically related to language teaching, the curricula suggest discovery and experiential learning and structuring content from known to unknown. Furthermore, all curricula call for an implementation of instructional technology. However, there are differences as the French curriculum explicitly calls for an implementation of activities that address high-order cognitive skills (critical thinking, analytical thinking, problem-solving and evaluation), and both the French and the German curriculum point to extracurricular activities.

Concerning the teacher roles, all curricula point to the need to accept learner mistakes as inevitable and beneficial for the learning process and to give positive feedback and reinforcement to keep learners' motivation levels high. Specifically related to language teaching, teachers are asked to abstain from error correction during communicative activities in the German curriculum. While the English curriculum emphasises the teacher's role for scaffolding and to provide a linguistic model for the learners, the French curriculum reminds teachers of considering individual differences in lesson preparation. Only the German curriculum assigns the preparation of specific programmes to meet the demands of disabled learners in special education to language teachers. According to the French and German curricula, it is the

teachers' task to be a role model by considering the responsibilities towards the Republic of Turkey.

Learner roles are inherent in the orientation towards communicative language teaching that encompasses learner engagement in collaborative language learning tasks requiring language production instead of taking a receptive or passive role. In line with this, all curricula demand practices that foster learner autonomy. The French curriculum additionally refers to strategy training and, as a specific point, to the acquisition of respect and etiquette in communication. Only in the German curriculum, self-assessment and active use of information technology in language work are explicitly indicated as tools to be used by learners to support the learning process.

Rather different foci are set concerning materials. While the English curriculum calls for the use of authentic and culturally sensitive material as well as material that contains characters and environment familiar to the learners (this point also in the French curriculum), the German curriculum on the one hand instructs the teachers to stick to the thematic content given for the school semesters but, on the other hand, encourages them to resort to a variety of materials and to avoid an overreliance of the coursebook.

3.4. Assessment

The findings related to assessment issues in the curricula are presented in four themes. The themes are the rationale of assessment procedures suggested in the curricula, competences and content to be tested, assessment types, time of assessment and assessors. The results are summarised in Table 3.

Table 3: Curriculum content covering contemporary issues

	English	French	German
Ration-ale/ aims	<ul style="list-style-type: none"> * Informing about learning progress * Evaluation of tasks and materials * Does not serve as negative reinforcement 	<ul style="list-style-type: none"> *Informing about learning progress *Regular and constructive feedback on student attitudes and behaviours displayed at school 	<ul style="list-style-type: none"> * Informing about learning progress * Focus on individual progress * Formative assessment * Instructional practice informed by assessment
Compe- tences or content assessed	<ul style="list-style-type: none"> * Communicative language competences * Receptive and productive skills * Analytical skills 	<ul style="list-style-type: none"> *Communicative language competences *Receptive and productive skills *Higher-order thinking skills *Affective skills (in-class participation, taking responsibility, collaboration, compliance with etiquette, etc.) * Test content in line with target knowledge 	<ul style="list-style-type: none"> *Communicative language competences *Receptive and productive skills *Individual progress in class (learner participation, communicative action, oral production, work in groups or individually) *Test content in line with target knowledge
Types/ tools	<ul style="list-style-type: none"> *Portfolios, projects, communicative activities preferable to traditional tasks *Mixture of alternative, traditional and electronic assessment types *Discussion Time activities, video blogs, Tech Pack, E-portfolios *Pen and paper in class 	<ul style="list-style-type: none"> *Performance assignments, projects *Written test items containing visual elements (graphic organizers, concept maps, mind maps, etc.) *Variety of items 	<ul style="list-style-type: none"> *Ongoing documentation of individual learning progress (by teachers) *Formal testing: a written tests with open, semi-open and closed questions; oral test
Time		Continuously	Regular
Asses-sors	<ul style="list-style-type: none"> *Multiple feedback providers (self-, peer, computer mediated; parent evaluation) skills assessment by group of teachers preferable 	<ul style="list-style-type: none"> *Teacher *Self- and peer assessment observation forms 	<ul style="list-style-type: none"> *Teacher self-evaluation in workbook

As shown in Table 3, the analysis produced a rather diverse image of regulations and suggestions to administer assessment. While the curricula resemble in terms of their rationales and language-related competences to be assessed, the French curriculum considers the assessment of expected learner behaviour in a school environment and the German curriculum highlights the assessment of and feedback given to individual learners. Another striking difference can be seen in the description of assignment types and tools with a stronger focus on electronic tools that allow remote assessment practices. While the French and German curricula explicitly emphasise the need for ongoing assessment, the English curriculum entails more specific information about by whom assessment can be administered with suggestions on how to make assessment procedures more reliable such as assessing learner skills by assessor groups. On the other hand, the French curriculum suggests enriching written tests through visual elements and the German curricula using a mix of different question types.

4. Discussion

The aim of this study was to compare the foreign language curricula for upper secondary schools in Turkey in terms of four curriculum components. The study was driven by the conviction that consistent curricular guidelines are desirable to address the need to educate young adults who are proficient in more than one foreign language and to reach comparable language proficiency levels at the end of Grade 12 irrespective of the foreign language learned (CoE, 2001; King, 2017). This, of course, does not mean that the curricula need to be identical given their linguistic complexity according to the learners' first language, their status in an educational context and diverse approaches in foreign language pedagogies. Considering these aspects, the study revealed somehow inconclusive results as consistency degrees differed in different areas. The research findings indicate a strong consistency among the three curricula in terms of major goals. The communicative language competence was established as the primary goal to attain in each curriculum to equip learners with linguistic, sociolinguistic and pragmatic competences in the target languages. Furthermore, the development of communicative skills is emphasized over that of traditional language skills such as reading comprehension and writing. This result is expectable because all curricula are firmly based on the CEFR (CoE, 2001). In spite of this, the use of different (yet comparable) descriptors for exit levels (B2+ for English,

B2.2 for French and German) and, more critical in terms of implementation, the dissimilar distribution of proficiency levels over school semesters are questionable given that similar cognitive competencies of language learners in the same age group and educational context do not necessitate such differences (Rindermann & Ceci, 2009). On the other hand, the three curricula are similar in that each aims to develop the learners' cultural competence and critical thinking skills. This might be attributed to the constantly emphasized significance of both phenomena in various documents released by the European Commission that encourage the integration of the 21st century skills into learning (EC, 2012; EU, 2006; 2017; 2018). Finally, inconsistency was found in the three curricula regarding learning competences, preparation for contact in situations in which the target language is the means of communication and digital literacy. Given the significance of these aspects from a language learning perspective and beyond, a need for collaboration among the language curriculum designers can be determined.

The analysis of the curricula with respect to the content to be covered in class revealed differences between the curricula and indicate areas of improvement. Apart from content specificity, the three curricula remarkably differ in the topics covered and they insufficiently cover themes that explicitly address contemporary issues (Barrot, 2019). 21st century topics are mostly confined to technology rather than other important themes as environment, innovation or creativity in the three curricula. This arguably mirrors the impact of technology that has evolved at an unprecedented speed for the last few decades on prominent aspects of life including science, health, commerce, tourism and art. All in all, the content selection and sequencing are discrepant to the claimed consideration of 21st century skills in the stated objectives, and this observation is supported by the rather strong consideration of topics referring to language use in the private domain and the underrepresentation of topics related to the educational and occupational domains. If one aim of teaching programmes is to serve as a route map for teachers to train young adults who are expected to be equipped with life-long learning skills, to decide on their future job and to further their education, the sparse implementation of occupational and educational themes is not likely to significantly contribute to the learners' work-life orientation (cf. Friberg, 2020).

In terms of teaching and learning processes, all curricula encourage discovery and experiential learning as well as constructing knowledge content

from known to unknown and underline the need of instructional technologies in language teaching. Differences are seen rather in details such as the emphasis on task-based learning in the English curriculum or on the need to systematically develop linguistic competence through contextualised grammar teaching in the German curriculum; however, all curricula consider validated foreign language teaching and learning approaches (Larsen-Freeman & Anderson, 2013; Nunan, 2015). More specific aspects contributing to effective teaching such as materials design to foster higher-order thinking skills, the implementation of extracurricular activities (Chan, 2016) and learning strategy training, or avoidance of coursebook overreliance (McGrath, 2013) are explicitly considered either in one or two but not in all curricula.

The analysis of the three curricula regarding assessment showed that they differ in the focused areas and the suggested assignment types and tools even though they introduced the same rationale and language-related competences to be assessed. Namely, the assessment of expected learner behaviour and enriching written tests through visual elements are highlighted in the French curriculum while the German curriculum puts the emphasis on assessment of and feedback provided to the learners and encourages the use different question types while assessing their success. The English curriculum, on the other hand, provides assessors with suggestion to increase the reliability of the assessment process. That the French and German curricula stress ongoing assessment, which is not highlighted in the English curriculum, constitutes another evidence for inconsistency between the curricula.

5. Conclusions

The practical implications for curriculum development in foreign language teaching arise from this study. From a general point of view, collaboration, involving experts with in-depth specialization in foreign language teaching and learning, curriculum and instruction, as well as foreign language teachers and learners across foreign language domains, is conducive to developing curricula that benefit from insights inherent in curricula in the same levels of education. It does not necessarily mean that each curriculum should contain the same content or be the translation of a particular curriculum. Rather, programme developers from different foreign language contexts should work collaboratively to inform each other about aspects that may be highlighted to different extents in their

language pedagogy while establishing learning outcomes, methodological guidelines, syllabi and assessment regulations. More specifically, the following aspects are worth addressing in the context examined in this study:

- Content selection and sequencing should be more strongly directed towards educating confident and conscious individuals with the awareness of their social and environmental responsibilities, as well as to provide guidance for future educational and occupational pathways. Curriculum developers from different foreign language contexts can share and discuss established modes of content selection, gradation and sequencing.
- In the light of the existing literature that provides evidence for the influence of extracurricular activities on academic achievement of learners (Eccles et al., 2003; Ming-Chia, 2005; Moriana et al., 2006; Seow & Pan, 2014), it is recommended that such activities should be integrated into the English curriculum. In a similar vein, the English and German curricula might include suggested activities that are designed to develop the learners' higher-order thinking skills that also contribute to the development of their life-long learning skills.
- The use of authentic and culturally sensitive materials should also be highlighted in the French and German curricula to develop intercultural awareness in language learners. These aspects are not ignored in these curricula but they are rather formulated as recommendations without hints on how to embed them in instructional practice. As in the case of the German curriculum, the English and French curricula might include statements that warn language teachers not to stick to the coursebooks as the only teaching material and encourage them to employ other supplementary materials to enhance authenticity and learner motivation.
- Given the observed inconsistency in assessment specifications with different main foci in the curricula, foreign language curriculum developers should exchange their approaches of addressing assessment in the curricula and collaboratively develop a more systematic delineation of assessment components. Such collaboration should aim at a stronger distinction between assessment for learning and assessment of learning, direct and indirect assessment, as well as between formative and summative assessment (Nunan, 2015). This is especially important to meet intended learning outcomes referring to linguistic and communicative competence as specified in the CEFR (CoE, 2001) because current assessment practices tend to neglect communicative

proficiency. The present research is restricted to the investigation of the three language curricula (English, French and German) for upper secondary schools in Turkey through document analysis. Further studies may compare the three language curricula for primary or higher education to see whether and to what extent they are consistent in terms of various programme components and how the need to tailor curricula to different age groups is addressed. In addition, neither programme developers' views were scrutinised nor does the study give any insights into how the curricula are perceived by teachers or transformed into instructional practice. Also, reference to needs analysis in the curricula was not considered in this study. The limitation to the analysis of the four programme components (i) goals and objectives, (ii) content, (iii) teaching and learning process, and (iv) assessment may be considered minor given the significance of these components for curriculum design (Richards, 2017). With an awareness of these limitations, it is hoped that this study offers, through its methodological approach and gained insights, perspectives on how to utilise the examination of related curricula to contribute to curriculum development in foreign language teaching and other academic disciplines that are closely related to each other competence as specified in the CEFR (CoE, 2001) because current assessment practices tend to neglect communicative proficiency

The present research is restricted to the investigation of the three language curricula (English, French and German) for upper secondary schools in Turkey through document analysis. Further studies may compare the three language curricula for primary or higher education to see whether and to what extent they are consistent in terms of various programme components and how the need to tailor curricula to different age groups is addressed. In addition, neither programme developers' views were scrutinised nor does the study give any insights into how the curricula are perceived by teachers or transformed into instructional practice. Also, reference to needs analysis in the curricula was not considered in this study. The limitation to the analysis of the four programme components (i) goals and objectives, (ii) content, (iii) teaching and learning process, and (iv) assessment may be considered minor given the significance of these components for curriculum design (Richards, 2017). With an awareness of these limitations, it is hoped that this study offers, through its

methodological approach and gained insights, perspectives on how to utilise the examination of related curricula to contribute to curriculum development in foreign language teaching and other academic disciplines that are closely related to each other.

Note

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CHAPTER 7

THE ASSOCIATION BETWEEN TAXONOMICAL LEVELS AND LEARNING-TEACHING STRATEGIES

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1. Introduction

Education can be defined as “the process of causing desired cultural changes in the brain as a result of bio-chemical actions with physical stimulus” (Sönmez, 2017). These physical stimuli can be very different and varied. of these stimuli asis the learning-teaching methods and techniques used in educational settings.

Learning-teaching methods and techniques used in educational environments are related to the educational objectives aimed to be observed in students. It can be expected that learning-teaching methods should conform with the readiness of the learners and the taxonomical level of the learning outcome. The nature of the target behavior the student will gain and the student’s readiness are decisive in how he/she will learn (Bloom, 1976).

Bloom identified taxonomic targets for the cognitive domain in education for the first time. According to him, the goals related to the cognitive field can be listed in six stages as knowledge, comprehension, practice, analysis, synthesis. Targets can be arranged taxonomically, from simple to complex, from casual to coarse, to preconditioned. In this context, the subordinate information step cannot be learned from it. In the same way, the application cannot be learned without learning the first two, analyzing without learning the first three, synthesizing without learning the first four, and learning the target without evaluating the first five.

According to Bloom, the information digit is the lowest level of the cognitive domain. This step includes recognizing, knowing what to say, knowing what it means to know. It cannot be passed on to the comprehension step without knowing the information in the step. The comprehension step may involve translating the meaning of the information step into a different language without disturbing the meaning, saying similarities and differences, telling why, how, how to tell, how the past and future will be if the conditions are the same.

In the gripping step, the person must realize the bigger meaning, self-worth. The person who gains the behaviors in the knowledge and understanding stages may come to the application level. At the application level, a person must be able to solve a problem using scientific, artistic, philosophical, mathematical methods and techniques. This problem must be new to him. It can not be the level of practice if you have encountered the problem before or have resolved a problem solved in the course.

A new problem must be different in terms of quantity and quality. When a person is brought to this level at least in the educational environment, the accuracy of education and its effectiveness can be mentioned. This step is very important for the person; because life wants people to solve the problems they are facing. The more you solve the problem, the greater the power of life. After the application step comes analysis. In this step, the person must divide the knowledge he has acquired into his constituent items. This distinction must be made in such a way that when the items are reassembled, the same whole must be fully formed.

Analysis requires a scientific attitude. It may be necessary to acquire all the behaviors of a novel, story, poem, formula, equation, union, knowledge, understanding, and practice related to that field. After the analysis step, synthesis occurs. In this step, the person should suggest a new, original model, formula, solution. It cannot offer known solutions. It must be new and original. A look requires invention and invention. After synthesis, the evaluation step comes. Assessment can be defined as the process of reaching a judgment by striking the required criteria (Bloom, 1976).

By teaching these steps, it is desired to investigate whether there is a meaningful relationship between learning strategies. The model, proposed by Sonmez, suggests that there is a significant relationship between the steps of the Bloom taxonomy and the learning-teaching strategies (Sönmez, 2017). The factors that affect learning include learners' level of readiness, feedback,

correction, cue, reinforcement, learners' active participation, educational technology, arrangement of the learning setting, affection, ways of reasoning, formative evaluation, the quality of the unit, time, quality of the teacher, learning-teaching method, techniques, tactics, and strategies used. Previous research findings have revealed the existence of an association between these variables and students' achievement (Bloom, 1976; Sönmez, 1992, Alacapınar, 2013). The methods, techniques, tactics, and styles used by each student and teacher may be different from each other.

There is quite a large literature on learning styles. One reason for this is the assumption that if we learn how students learn, we can help them better in the educational environment. Moreover, if the teacher is informed about the learning styles, she can arrange the learning environment accordingly. Such an environment can be more effective for learning since learners can feel more comfortable and can learn better. The previous research about this issue revealed a significant association between learning styles and students' achievement (Mathews, 1996; Ayersman, 1996; Bahar, Özen & Gülaçtı, 2007). Furthermore, if the students' learning styles are determined, it can be easier to some extent to decide about their future professions (Sternberg & Grigorenko, 2001; Biggs, 1979).

In addition to the learning styles, a variety of learning and teaching strategies have been introduced. They include expository, discovery, inquiry, mastery, and systematic learning strategies (Sönmez, 1992). Every learning-teaching strategy can be used in the education environment in different ways. Similarly, different learning-teaching activities can be planned and used for different learning objectives.

The strategy of expository teaching was created by Ausubel (Ausubel, 1963). According to Ausubel; learning should be meaningful. Learning through presentation is meaningful if done effectively. Moreover, when this kind of learning is done effectively, a lot of knowledge can be transferred especially at the knowledge level in a short time. According to Ausubel, there is a psychological foundation for learning through the presentation. These are: The concept, knowledge, and principles to be learned newly should be related to the previous information. Otherwise learning will not make sense. Concepts in a unit should be presented in order by students. If it is not so contradictory and inconsistent, the student may have difficulty in learning. Undo deduction should be used to learn. Learning has taken place when students are learning in

different situations and solving problems (Ausubel, 1963). With this strategy, three steps must be observed while the course is being processed. The teacher should bring the student into readiness by using advanced organizers. It should be noted for this, it should remind the old knowledge about the subject, it should explain the relationship between the main idea and the concepts. The student must be informed and motivated. It should remind prerequisite learners and link them with new learners. By presenting relevant materials, they should indicate how they will be used in the new context. From now on, the new concept should present the principle, the case step by step, and the details to the students. The teacher should provide transfer and durability by giving new and appropriate examples of the students and giving them feedback and correcting the principles of merging, reconciling, and applying the old and new knowledge to them.

The discovery teaching strategy was created by Bruner (Bruner, 1968). In this strategy, it is aimed that the learner finds out knowledge, skill, emotion, and intuition by working on the given or examples. The student is required to work as a scientist. In this way, his creativity, self-confidence can be improved. The knowledge, skills, emotions, and intuition acquired with this strategy may not be forgotten; because the student has discovered new knowledge, skills, emotions, and intuition by using inductive reasoning that worked like a scientist himself. Through the invention, it is possible to learn learning outcomes generally at the level of comprehension, analysis, and synthesis. According to Bruner, the basis of this strategy is determined as follows: Student's readiness should be selected and appropriate experiences should be offered. The content to be taught must be structured. Learning experiences should be put in order, and how and when reinforcements should be given (Bruner, 1968).

Before the implementation of the Discovery Teaching Strategy, the teacher must present at least three examples to the students. Students should work on these examples to find common and different characteristics. If they can not find it, the teacher has a clue. Give another example. To present non-examples after that. compare students to sample and non-sample. They discuss principles, generalizations, and show them examples. Students are given new and appropriate examples.

The strategy of inquiry teaching (Dewey, 1933) is based on the philosophy of Dewey. In this strategy, the problem is identified first. It is divided into sub-problems. Estimated solutions are established. Hypotheses are tested with the collected data. Hypotheses are accepted, rejected, or repaired. This process lasts

until the problem is resolved. This is also called the trial-and-error, problem-solving, scientific research process. Hypothetically-deductive reasoning can be used in this strategy. In other words, both deduction and induction can be combined. It can be said that this strategy is more effective when learning application and application top learning outcomes. This strategy can be used in four ways in the classroom environment. 1. All the operations are done in advance and the results show the teacher how the process is working on certain research. Then, students use their samples to determine their problems and -sub-problems. They build predictive solutions (solutions) about these sub-problems. To test the essays, they specify where, from whom, how, and by what means to collect the data. Collect data using data collection tools. They test the tests by analyzing them. 2. The teacher presents the problem, the other actions are done by the students under his supervision. 3. The teacher presents the problem, the students do all the other things themselves. 4. Students make and show all operations.

Mastery Learning is the learning model of Bloom (Bloom, 1976). In this model, the learning outcomes must be determined by the student's cognitive entry behaviors and the affective entry characteristics, because there is a significant relationship between these and learning (Bloom, 1976). This is the quality of instruction. The quality of the teaching service includes reinforcement, feedback, correction, cues, and student involvement in the learning process. In addition, the units must be arranged in a preconditioned manner, and must not be passed on to another unit without being fully taught (Bloom, 1976, Özçelik, 1974, Yıldırım, 1984-85).

In the learning model presented in Bloom, input and processing variables include cognitive input behaviors, affective input characteristics, and quality of instructional services. There is a meaningful relationship between these variables and learning.

1. The cognitive input behaviors and affective input characteristics of the learners should be known. That is, before starting a lesson or a course, it is important to understand what the learners bring with them, what they know, what they are interested in, their motivation, It should be identified; then the teaching should be organized with these characteristics in mind; because cognitive input behaviors consist of .50 of the variance observed in success, .25 of affective input characteristics; they can explain .65 when both are hired together.

2. The teaching service, at least, must be equipped with the following qualities:
 - a) Signs (hints) must be found in each case of training. For some students, signs can be taken from written sources. For some students, these can be in the form of verbal explanations. If some are students, the combination of demonstrations, models, and explanations or other signs can be used.
 - b) There must be reinforcement in each case of education. These reinforcements should be arranged according to the cultural values experienced in the student, the nature of the course, the time, the place, and the attitudes to be attained.
 - c) Active participation of the student should be provided in case of every education. This participation may be open and in mental (implicit) forms. The repetition and practice that the student makes for himself may also be a measure of his or her attitude.
 - d) Feedback and correction should be found in each training situation. All pupils in group teaching situations need a variety of evidence from which the learning process can be derived from feedback on the degree of effectiveness for each student. Teachers in this situation should be able to use corrective actions (correcting mistakes, correcting deficiencies) quickly wherever necessary. It is observed that in a situation where the full learning strategy seems to be successful, it is observed that students are taught how to learn what they have learned at the current university and what they need to learn before moving on to the other class in the discipline (eg, assessment of formative- and the students benefit from the results of these tests in the management of the teacher. The missing and wrong of each student should be determined by looking at the results of the follow-up evaluation at the end of each unit; then supplementary teaching should be done to eliminate them. The student should not be allowed to move to the next unit without correcting the missing and wrongs in each unit. This will enable them to achieve their full learning, which will reduce the speed and diversity of learning among students. These activities may be complementary training. In this kind of education, “one-on-one training” should be done; If this is not the case, students should be divided into small groups and trained accordingly; additional instruction and time should be reserved for this; resources and supporting documents should be provided; academic

educational games are run-on; it should be possible and opportunity to repeat the learning of the student.

- e) Courses or courses must be ranked in stages. Each of these graduated units must not be passed on to each other without being fully learned. Cognitive input behaviors, affective input characteristics, and quality of teaching explain 81 of the variance that is observed to be successful when the three work together (Bloom, 1976: 169, 218).

Much research has been done in this regard. Özçelik's research revealed a significant relationship between student's participation and access. It facilitates learning the effective participation of the learners in the educational environment (Özçelik, 1974). Senemoğlu, on the other hand, determined the return effect of the correction in the research he conducted in 1987. It determines that feedback and correction affect access significantly. Bloom confirmed the view put forward (Senemoğlu, 1987).

Systematic learning is a training movement created by Sönmez (Sönmez, 2004). It is based on the philosophy of likelihood. Any type of strategy, method, technique, and tactics can be used in the educational environment when it comes to time and place. Sometimes none can be effective. The place can come with a single strategy, method, technique, and tactic. Students may not always be placed in the center. There are situations where the subject, learning outcomes, state, teacher, etc. One or more of them may be put in place, such that there may be nothing in the center. A dynamic balance can be taken into account in this context. When learning, the learner can expect to find knowledge, concepts, apply it and create new knowledge skills, emotions, and intuition from it. An appropriate training environment can be created. Any variable that is effective in such an educational setting can be used when the place and time of reasoning come. It can be linked to other courses (Sönmez, 2004).

This model, which was proposed by Sönmez in 1982 and designed and applied according to the lesson plans and evaluated according to each application result, has been tested in different schools, classes, and lectures in doctoral thesis and master thesis and some researches (Turan, 1998; Kayabaşı, 1997; Sönmez, 2000; Kılıç, 2000; Emir, 2001; Alacapınar, 2001; 2002; Memişoğlu, 2003, Sönmez, 2004; Paş, 2004; Kapıcıoğlu, 2006). The obtained data were used to construct the model. Stringed education (teaching) is based on the philosophy of possibility. According to this philosophy, all kinds of options and possibilities

can be used in the educational environment when the place and time come; because we have no definite and unchangeable knowledge for now. As such, unchanging proposals, such as in other learning and teaching strategies, theories, methods, and approaches, can not be put into the foundation of the education system for the time being. The word “education” should be student-centered. No teacher and subject-centered. The student is not punished. Sanctions are not used. No penalty is given, sanctions are used.

The presentation path should be used in the educational environment. No way to discovery should be used. Learning does not link stimulant behavior. No is the process of information processing. “ can not be permanently placed based on the education system; because the scientific knowledge obtained so far is not correct. In addition, the reality is constantly changing up to -273 degrees. The criteria we use are all relative. The proof is a degree of work and is always about the future. This and similar data show us that there is a constant change and dynamic balance in nature, society, subject area, and individual.

So instead of the constant student, teacher, nature, subject, society, state-centered arguments; place income student, place income society, place income nature, place income subject, place income can all be taken to the center of the compound. So a dynamic centering can be more consistent. For example, let’s leave it in a life-threatening situation so that the student can learn by himself, In this case, the teacher must first show and show the danger, and take precautions. So the teacher and the subject should be put in the center. Otherwise, the student may lose his life. Likewise, in an environment where air, soil, water pollution is intense and dangerous, natural disasters such as earthquakes, floods, landslides are predominant, nature can be taken and taken away from the center. When the society, the interests of the country, the war, the national disasters, etc. are mentioned, then the country can be taken to the community center. The latent powers of the teacher, the needs, the experience of learning, and so on. the student can be placed in the center when the characteristics are dominant.

Such a dynamic balance approach may be better suited to the criteria of both knowledge and education. It should also be remembered that there is not unlimited freedom for the moment, neither in the society nor in the individual. The boundaries of all our behaviors are drawn with the boundaries of our preparedness, the boundaries of nature and society, and this line has a constantly changing dynamic structure. We can not always do what we want. Freedom is determined by the multiplicity of options within these boundaries,

the possibilities, and the power to use them dynamically. For him, neither the student nor the teacher can act in the educational environment like the parents and the state. Sanctions can be applied if you act. If he insists and persists, healing can be done and penalties can be resorted to because sanctions, remedies, and punishments are in nature, in society, and the individual. Sanction and remedy can be used as a punishment (very rare in the penalty learning-teaching environment) as the place comes. If you can not provide it, the string may crash; because all the entities shift entropy. In this model, the following principles were taken as a basis:

1. No theories can explain learning and teaching alone. There are shortfalls of each theory. Each tries to explain the different dimensions of the learner.
2. Every behavior, that is, cognitive, affective, kinetic, intuitive properties can not be taught personally by a single theory, method, or technique. Each behavior can not be taught by a single learning theory while teaching the person. Sometimes more than one theory is employed; because every behavior can contain cognitive, emotional, kinetic, and intuitive features.
3. Every person can not learn the same behavior with the same strategy, theory, method, technique, and tactics. Everyone can use different ways to learn and teach the same behavior; because human beings are different from each other, are similar in some care, and are multidimensional entities. Moreover, people can change their learning methods, techniques, and tactics.
4. Man often can not learn with a single activity. Behaviors become more permanent when many activities are used together. When a person learns, they can often apply for more than one activity. Sometimes he learns by singing, playing, repeating, solving, taking notes, listening, asking questions.
5. When the level and nature of the behavior change, different strategies, theories, methods, techniques and tactics, and ways of reasoning can often be employed. sometimes inventions, presentations, research inquiries, full learning, or stringed training may be available. At the same time, people can learn behaviors using inductive, deductive, hypothetical deductive, dialectic, fuzzy logic.
6. Teaching can be taken on a unit basis, not a course. This unit is surrounded by math, Turkish, painting, music, physical education, and so on. lessons can gain target behaviors.

7. The student can gain the ability to find, remove, understand, use and reproduce knowledge (Sönmez, 2004). It may be that these behaviors are taught. Before the person learns, he realizes the object, the fact. He distinguishes himself from others and finds his qualities and distinctive characteristics; can grasp. Then he can set the principles on which he stands. These principles can solve problems using new and similar situations. At the last step, this knowledge, skill, emotion, and intuition can create new knowledge, skills, emotions, and intuitions.

The most important difference from the other learning-teaching theories of serialized education is that there are situations in which the determined behavior can not be taught to that person in those conditions. Again, there are situations in which the determined behavior can be acquired by one method, technique, tactic, strategy. This is the most important property that separates it from the eclectic method.

The behaviors to be taught in education have been classified taxonomically in certain domains. One of the most common and well-known cognitive taxonomy belongs to Benjamin Bloom. Some modifications were done in the taxonomical structure of this classification (Krathwohl, 2002). According to these revisions, the synthesis level was removed to the top of the list.

This study investigated the association between the knowledge, comprehension, application, analysis, synthesis, and evaluation levels of Bloom's original cognitive taxonomy and learning-teaching methods. In other words, this study investigated the answer to the research questions "Do the method, techniques, tactics, and strategies to be used in learning-teaching environment change as the taxonomical level of the educational objectives change?" Previous research findings suggest that as the taxonomical level of the learning objectives changes, learning-teaching methods also change. Previously an association has been found between learning-teaching methods and levels of the educational objectives according to Bloom's taxonomy (Sönmez, 1992). Based on these data the following model has been proposed (Sönmez, 1998).

Table 1: Taxonomical Levels of the educational Objectives and Learning-Teaching Strategies

<i>Learning-Teaching Strategies</i>	<i>Bloom's Taxonomy Cognitive Domain</i>	<i>Affective Domain</i>	<i>Psychomotor Domain</i>	<i>Reasoning</i>	<i>Type of Behavior</i>
<i>Expository Teaching</i>	Knowledge	Receiving	Perception	Deduction	To recognize, to remember, to choose, to distinguish, to be aware
<i>Discovery Teaching</i>	Comprehension, Analysis	Responding, Valuing		Induction, Dialectic	To transfer, to reason, to explain, to predict, to care, to value
<i>Inquiry Teaching</i>	Application, Synthesis, Evaluation	Organization Characterization	Perception, Making Manuel Control, Making Manuel Control, Skill, Fitting situation, Creating	Hypothetic Deductive	To investigate, to solve a problem, to do and demonstrate, to find a new way, solution, product, attitude, personality, to give the same reaction to the same stimuli
<i>Mastery Learning</i>	All objectives	All objectives	All objectives	All ways of reasoning	All behaviors
<i>Systematic Learning</i>	All objectives	All objectives	All objectives	All ways of reasoning	All behaviors

In the table above, Sönmez (1998) presents learning-teaching strategies and ways of reasoning proposed to be used to teach behaviors within the cognitive, affective, and psycho-motor domain (Sönmez, 1998). In the present study, cognitive, psychomotor, and affective domains are considered together, because in Sönmez's learning model, learned behavior is coded into

all domains together (Sönmez, 2017). In this context, some learning objectives related to all three domains are investigated in the present study.

1.1. Survey Objective

There are many problems concerning learning in educational settings. One of these problems can result from the strategies, methods, and techniques used in the learning-teaching environment. None of the learning-teaching theories, methods, or techniques can explain thoroughly the learning phenomenon alone. Some of the problems can also stem from this. Thus the present study intended to answer the question “What methods are more effective in teaching different levels of behaviors to resolve these problems and facilitate learning.” If this question is answered, the learning-teaching process can become easier and more enjoyable to some extent.

1.2. Problem Statement

Is there a significant association between learning-teaching strategies and taxonomical levels of educational objectives in cognitive, affective, and psychomotor domains?

1.2.1. Sub-Problems

1. What strategy is more effective to teach behaviors at the knowledge level?
2. What strategy is more effective to teach behaviors at the comprehension level?
3. What strategy is more effective to teach behaviors at the application level and above?
4. What strategy is more effective to teach behaviors at the reaction level?
5. What strategy is more effective to teach behaviors at the guided response level?

2. Methodology

The quantitative pre-test post-test experimental design and qualitative phenomenological design were used together in this study.

2.1. Data Collection Process

First, five 5th grade classes from a primary school were selected. Then, they were matched according to the students’ population, age, gender, grades in the

report card, and mean scores in social studies courses. Next, the strategies to be used in each of these classes were demined randomly. The thematic unit called “Dreams that come true “was taught by the same teacher using the predetermined strategy (expository, discovery, inquiry, mastery learning, and systematic learning) according to the lesson plans for six weeks (3 lessons each week, and 18 lessons in total). These lesson plans involve knowledge, comprehension, application, and synthesis levels of the cognitive domain, reaction level of the affective domain, and guided response level of the psycho-motor domain. The appropriateness and relevance of the lesson plans prepared according to these five strategies were tested by three experts. The correlation coefficient indicating the consistency between experts was found to be 0.82.

The learning outcomes in cognitive, affective, and psycho-motor domains were measured via suitable items. For the appropriateness and relevance of these items, three experts were consulted. The correlation coefficient between the opinions of these experts was found at 0.86. This value was considered enough to prove the content validity of the test. The trial instrument included at least three items to measure each learning objective. According to the initial analysis after the pilot study, the cognitive domain test included thirty-two items, the affective domain test included six items, and the psycho-motor domain test included ten behaviors. The reliability of the cognitive test was estimated via the KR-20 formula, which yielded a coefficient of 0.76; while the reliability of the affective and psychomotor domain tests was estimated with the Cronbach Alpha formula, which yielded internal consistency coefficients of 0.78 and 0.82, respectively (Sönmez & Alacapınar, 2016). Thus, all three tests were considered to be reliable. These tests were administered as to all five groups pre-test and before the experimental treatment, and as post-test after six weeks.

2.1.1 Participants’ Profiles

The information about the students in five groups (number, age, gender, report card grades, and first semester grades for social studies course) was collected from the official records. These data are presented in Table 2.

Table 2: Students Numbers, Age, Gender, Grade in Report Card and Social Studies Course Grades

Groups	n	Age		Gender		Report Card Grade		Social Studies Grade	
		X	sd	Girl	Boy	X	sd	X	sd
Expository	30	11.10	0.45	16	14	4.2	0.41	4.6	0.32
Discovery	29	11.9	0.41	15	14	4.3	0.32	4.5	0.43
Inquiry	29	11.9	0.42	14	15	4.3	0.33	4.6	0.32
Mastery Learning	31	11.9	0.44	16	15	4.2	0.34	4.6	0.31
Systematic Learning	30	11.9	0.48	15	15	4.2	0.42	4.5	0.46

As it can be seen in table 2, the possible differences between the numbers, ages, gender distributions, report card grades, and social studies course grades of the students in five classes/groups were tested with variance analysis. None of the values were found statistically different at a significance level of .05 and with the degree of freedom of 4-146. It can be said that the groups are similar to each other in terms of these variables.

Variance analysis was used to test whether the cognitive, affective, and psychomotor domain pre-test scores of the students in each group are similar or not. Results are presented in Table 3.

Table 3: Variance Analysis Results on Pre-Test Scores of Groups for Cognitive, Affective and Psycho-Motor Domains

	Expository			Discovery			Inquiry			Mastery			Systematic Learning			F value
	n	x	Sd	n	x	Sd	n	x	Sd	n	x	Sd	n	x	Sd	
Knowledge	30	0.46	0.57	28	0.5	0.58	29	0.62	0.56	31	0.38	0.55	30	0.62	0.56	.961
Comprehension	30	0.37	0.52	28	0.32	0.46	29	0.21	0.49	31	0.38	0.56	30	0.45	0.51	.40
Application and above	30	0		28	0		29	0		31	0		30	0		0
Psychomotor	30	0		28	0		29	0		31	0		30	0		0
Affective	30	1.4	0.89	28	1.21	0.83	29	1.56	0.73	31	1.61	0.72	30	1.51	0.78	1.29

As it is seen in table 3, the F value calculated to compare the pre-test scores of the groups in terms of cognitive, affective, and psychomotor domains are .961, .40, 0, 0, and 1.29, respectively. The value read from the F table is 2.43 for a significance level of .05 and degree of freedom at 4-146. Since the calculated values are under the value in the F table, there is no significant difference between groups' cognitive, affective, and psychomotor domain pre-test scores. Thus it can be said that groups are equivalent to each other in terms of their pretest scores.

3. Findings

The results of the variance analysis, which tested whether learners' post-test scores from cognitive, affective, and psycho-motor domains differ significantly according to the learning-teaching strategies used, are presented in Table 4.

Table 4: Variance Analysis Results on Post-Test Scores of Groups for Cognitive, Affective and Psycho-Motor Domains

	Expository		Discovery		Inquiry		Mastery		Systematic Learning		<i>F and t values</i>					
	<i>n</i>	<i>x</i>	<i>n</i>	<i>x</i>	<i>n</i>	<i>x</i>	<i>n</i>	<i>x</i>	<i>n</i>	<i>x</i>						
	<i>Sd</i>		<i>Sd</i>		<i>Sd</i>		<i>Sd</i>		<i>Sd</i>							
<i>Knowledge</i>	30	8.60	1.45	28	6.93	1.78	29	5.65	1.80	31	8.00	1.63	30	8.31	1.81	F=14.80**
<i>Comprehension</i>	30	3.20	1.32	28	7.57	1.77	29	5.21	2.34	31	7.55	1.88	30	8.09	1.91	F=36.31**

	Expository			Discovery			Inquiry			Mastery			Systematic Learning			F and t values
	n	x	Sd	n	x	Sd	n	x	Sd	n	x	Sd	n	x	Sd	
	Application and above															
30	2.60	1.45	1.75	28	5.55	1.75	29	7.10	1.35	31	9.13	1.96	30	9.86	2.08	F=83.76** t=E&D,I,M,S=6.88**, 12.34**,14.73**, 15.58** D&I,M,S=3.88**,7.46**,8.54** I&M,S=4.63**, 5.99** M&S=1.40
30	3.13	1.55	1.18	28	4.71	1.18	29	7.10	1.77	31	8.13	1.20	30	8.03	1.18	F=74.02** t=E&D,I,M,S=6.35** 8.15**, 14.1**, 13.65** D&I,M,S=5.95**, 10.97**,10.61** I&M,S=2.63*, 2.35* M&S=.31
Psychomotor																
30	5.26	0.78	1.09	28	5.36	1.09	29	5.55	0.78	31	5.90	0.30	30	5.89	0.31	F=4.77** t=E&D,I,M,S=.36 1.40,4.21**,5.74** D&I,M,S=.77,2.67*, 2.36* I&M,S=2.32*, 2.05* M&S=.49
Affective																

Whether learners' scores from cognitive, affective, and psycho-motor domains differ significantly according to the learning-teaching strategies used was first tested with variance analysis. The F values calculated were 14.80 for knowledge, 36.31 for comprehension, 83.76 for application and above, 74.02 for psycho-motor, and 4.77 for the affective domain. These values were found significant at a significance level of .001 and degree of freedom at 4-146. Since learners' scores for different learning outcomes differed significantly according to the learning strategies, an independent samples t-test was used to find out between which groups the differences are observed. As shown in the last column of Table 4, it can be said that expository teaching, mastery learning, and systematic learning strategies are significantly more effective in teaching behaviors at the knowledge level of the cognitive domain; discovery teaching, mastery learning, and systematic learning strategies are significantly more effective in teaching behaviors at comprehension level of cognitive domain; inquiry teaching, mastery learning, and systematic learning strategies are significantly more effective compared to other strategies in teaching behaviors at application and above levels of cognitive domain and psychomotor domain.

It can be asserted that although there is no significant difference between mastery and systematic learning strategies in terms of teaching knowledge, comprehension, application, and above levels of the cognitive domain, psychomotor and affective behaviors; both strategies are significantly more effective in teaching cognitive, affective and psycho-motor behaviors (except for expository strategy at knowledge level) compared to three of the other strategies. Based on these it can be suggested that there is a significant association between strategies and the taxonomical levels of some of the behaviors.

In the qualitative strand of the research one student was selected from each of the five groups where different strategies were used. They were exposed to semi-structured focus group interviews. After having their consent, some slight modifications were done on their responses, which are presented below:

Opening question: Why do you think you could answer the questions about concepts and principles correctly?

Probe: Why did you have difficulty in others?

K.1. (Expository): Sir, you have explained science, invention, and discovery very well. Then you illustrated it with examples. And we did. Were defined it after making discussions. We gave new examples. I have learned the words and rules very well. I fully comprehended it. I learned very well in the

lesson the things I did. However, I had difficulty in the exam, as the questions were different from the things we learned in the lesson. I could not finish in time. I was excited.

K.2. (Discovery): First I had difficulty. Why didn't you tell the lesson? We found the rules working on the examples. At the end of the lesson, we defined science, invention, and discovery. We found the rules. We applied. I was reassured. Then I realized why you didn't tell the lesson. You wanted us to contemplate it. You simply guided us. I learned very well. I had difficulty finding a new solution. Time was not enough. I felt panicked that I couldn't make it in time.

K.3. (Inquiry): I was surprised first. I asked myself: How can I do? Is it a joke or am I going to find out how the living creatures reproduce? And the world. I couldn't understand. Why on earth did I come to school and the teacher? I was afraid, but later I learned how to do research. I collected the information via computer. I have made some observations. I have asked questions and collected data. I liked it very much. I can breed chicks. I like them very much, sir. They are so cute. I had difficulty with some questions. I didn't investigate them. The time was not enough to answer all questions. Now I am afraid, I am excited that I am going to fail the exam.

K.4. (Mastery): I liked this lesson. We had a quiz after every lesson. We found our mistakes and corrected them. We didn't pass on the next lesson without fully understanding the topic. You always supported us. I learned everything during the lesson. Nothing was left to home. I couldn't explain it to my mom. Sir, I liked to think about what will happen if the sun never sets. I am planning to put a few suns in the sky. When I said that at home, they got me angry. They made fun of me. I couldn't explain them. Questions were not difficult.

K.5. (Systematic): Course was very enjoyable. We played games. We wrote poems. We composed and sang songs. I liked the knowledge contest very much. I couldn't understand how fast the lesson passed. I didn't want them to finish. It is great to prepare and solve puzzles, to prepare posters, to write and play drums. We had fun and learned, as well. We discovered all the knowledge from picture sets, stories, and tales. You didn't tell the lesson. You asked questions, gave cues, that all. Especially investigating, doing projects and presenting them made me more intelligent. I am going to be a scientist in the future. I didn't have difficulty in the exam. It was very pleasing to exhibit what we produced. Let's invite our parents and the press, sir! I want them to see what we have done.

4. Discussion and Conclusion

As a result of the experimental strand of the research, it was found that expository teaching strategy was more effective than mastery learning, systematic learning, discovery, and inquiry learning strategies in teaching behaviors at the knowledge level of the cognitive domain. In expository teaching strategy, first, the teacher gives the definition and explains it. She presents at least two or three different examples. Then, she asks the students to repeat the definition and give a new example. She reinforces the correct answers, corrects the mistakes, and completes the missing points. Next, she passes on the comprehension and application levels and repeats the same activities (Ausubel, 1960; Ausubel, 1963). Behaviors at the knowledge level include “to recognize, to recite, to select and sign”. When the teacher explains and then the students do and exemplify, it can be easier for the students to remember or conduct behaviors at the knowledge level. Participants in the qualitative part of the research support this opinion saying “Sir, you have explained science, invention, and discovery very well. Then you illustrated it with examples. And we did. Were defined it after making discussions. We gave new examples. I have learned the words and rules very well. I fully comprehended it.” Among five learning strategies, the highest mean scores in terms of knowledge level belonged to expository teaching with an average of 8.60, followed by systematic learning with an average of 8.31, then mastery learning with an average of 8.00. Learning behaviors at the knowledge level can be facilitated by having connections with the most correct knowledge, being willing and determined (Ausubel, 1978), repetition, correction, reinforcement, and student participation, since they are also used effectively in mastery and systematic learning strategies (Bloom, 1976; Sönmez, 2003; Sönmez, 2012). Moreover, the learning-teaching activities that students are used to in the Turkish Education System are generally based on lecturing by the teacher. This can be effective in learning and remembering the behaviors at the knowledge level.

Behaviors at the comprehension level include steps of transferring, interpreting, and predicting. These behaviors can further include converting the digital data into graphics, explaining and writing what a graphic says, telling or writing the similarities and differences with reasons, and reasoning. The comprehension level achievement scores of groups in which teachers used discovery teaching, mastery, and systematic learning strategies were found significantly better than the mean achievement scores of groups in which

lessons were taught using expository and inquiry teaching strategies. Students' mean achievement scores at comprehension level were 7.57 for discovery teaching strategy; 7.55 for mastery learning strategy; and 8.09 for systematic learning strategy. In a lesson taught by discovery teaching strategy, first, the teacher provides two or three examples about the concept to the class. Students work on these examples, try to find out the common point in the examples by discussing and making use of the vivid similarities and differences. They explain why it is based on the examples, and then they give their examples. They can decide on the appropriateness of the given examples and conclude (Bruner, 1962; Bruner, 1968). The same procedures are followed for other concepts and learning objectives. Remarkably, students are asked to define the concept or the principle, to find the similarities and differences, i.e. to discover the knowledge and to reason (Kirschener, Jweller, & Clark, 2006). In this context, the student participates the lesson actively, work with his peers, wonder and feel more self-confident as he learns. The teacher acts as a guide only. The student supported this opinion saying "We found the rules working on the examples. At the end of the lesson, we defined science, invention, and discovery. We found the rules. We applied. I was reassured. Then I realized why you didn't tell the lesson. You wanted us to contemplate it. You simply guided us. I learned very well. "In mastery learning strategy, the teacher does not pass on the second learning objective before each learning objective has been achieved. Formative evaluation is used to determine how much students have learned. Then mistakes are corrected, missing points are completed, and correct answers are reinforced. All these can be factors promoting success (Özçelik, 1974; Yıldırım, 1984-85; Alacapınar, 2013). In systematic learning, in addition to all the learning-teaching activities, a variety of other learning-teaching methods and tactics can be used. Students can learn by playing and having fun without getting bored. These can be the reasons that led to better success at the comprehension level (Sönmez, 2004; Alacapınar, 2016).

It was found that inquiry teaching strategy is significantly more effective than mastery learning, systematic learning, expository and discovery learning strategies in teaching behaviors at the application level and above, as well as the psycho-motor and affective behaviors. Behaviors at the application level or above, and psycho-motor behaviors may require intensive mental and physical activity. Inadequate previous learning can adversely affect them. In inquiry teaching strategy, students can be expected to learn all target behaviors

themselves by investigating (Chu, 2009). Confirmation, structured, guided, open/true types of inquiries can be used in the learning environment (Ban chi & Bell, 2008). In such an environment, students can investigate and find any kind of knowledge and skills, do or apply. Problem-solving, using the scientific method, projects can be used in inquiry teaching, mastery, and systematic learning strategies. The student in the class taught by inquiry teaching supports this idea saying "...but later I learned how to do research. I collected the information via computer. I have made some observations. I have asked questions and collected data. I liked it very much. I can breed chicks. I like them very much, sir. They are so cute. "Similarly two students in classes taught by mastery and systematic learning strategies also supported this idea saying "We had a quiz after every lesson. We found our mistakes and corrected them. We didn't pass on the next lesson without fully understanding the topic. You always supported us. I learned everything during the lesson. Nothing was left to home. I couldn't explain it to my mom. Sir, I liked to think about what will happen if the sun never sets. I am planning to put a few suns in the sky."... "Especially investigating, doing projects and presenting them made me more intelligent." The difference with the affective behavior can stem from the fact that the students liked the lessons, enjoyed them, and did not get bored. This is supported by the quote "I liked it very much. I liked this course. It was very enjoyable. I couldn't understand how fast the lesson passed. I didn't want them to finish. It is great to prepare and solve puzzles, to prepare posters, to write and play drums. We had fun and learned, as well. "These features are involved in systematic and mastery learning strategies (Bloom, 1976; Sönmez, 2004; Sönmez, 2007).

The behaviors in the Psycho-motor domain were those requiring experiment and observation. That being the case, demonstrate and get-to-do method, inquiry, mastery, and systematic learning strategies are used. Students learned how to conduct an experiment and observation by investigating and discovering themselves. This can be one reason enhancing their success since students' active participation and comprehension of skill in practice can facilitate learning and transfer (Yen & Hunang; 2001). These characteristics are more marked in inquiry learning, mastery learning, and systematic learning strategies compared to expository and discovery learning strategies. Furthermore, in these three strategies, learning objectives at the application level and above and in the psycho-motor domain is new to the students and have not been taught in the lesson. Students are exposed to a new situation at a time and asked to solve

the problem (Hmelo & Duncan 2007). Since these activities are frequently used in all three strategies, students might not have had difficulty (Yoon, Joung & Kim, 2012). In expository and discovery learning strategies, the questions may be new for the students. Students are shown during the lesson how to solve such problems under teachers' guidance. However, when the students face a different problem for the first time, they may falter. Two students supported this view saying "However, I had difficulty in the exam, as the questions were different from the things we learned in the lesson. I could not finish in time. I was excited." "I had difficulty in finding a new solution. Time was not enough. I felt panicked that I couldn't make it in time."

5. Suggestions

Based on the findings of the present study, it can be recommended that new researches should be done about all subjects to get more reliable results. Moreover, it can be investigated whether there are significant associations between other learning methods and techniques and levels of learning objectives. Also, new strategies other than the ones discussed in this study can be produced.

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CHAPTER 8

ROLE PLAYING AND GAMES FOR TEACHING ANCIENT POLITICAL THOUGHT

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1. Introduction

Today, the importance of experiential learning has been widely acknowledged. Especially after 1980s, the social science classroom witnessed a paradigm shift in the teaching strategies as the desired outcome of learning became more learner centered and focused on critical thinking (Svinicki, 1999, p.5). Thus, simulations, role-play and games have been integrated into the curriculum of many undergraduate level political science classes to increase the interactive learning based on experience. However, we observe that undergraduate level political theory courses are still structured in a traditional lecture style (Moore, 2011).

A typical introductory level political theory class is structured as a survey of western political thought covering a selection of the major theories and thinkers from antiquity to the 20th Century. As instructors, we want our students to read difficult philosophical texts and engage with these highly abstract political ideas critically. Ideally, at the end of the semester, we expect that our students would acquire a basic understanding of political concepts and critically analyze and react to the current political environment. Pop-quizzes, reaction papers and discussion group activities are generally employed to encourage students to engage with the material presented. However, it is still difficult to convince students about the relevance and importance of the material that we are teaching to the contemporary political affairs that they are most interested in. For students, the text is too abstract and demands serious thinking process.

There lies the challenge for the teachers of political theory. How can we get our students to understand the importance and the relevance of political ideas so that they can devote the necessary time to understand and critically analyze them?

After years of teaching the survey of western political thought classes, I was convinced that I should somehow bring the political philosophers down from their ivory towers so that students can engage with their ideas, connect the dots between historical and contemporary political events and perhaps be inspired by the ancient wisdom to initiate political action for future. Even though I was determined to change the structure of my class in order to incorporate interactive learning tools, I felt lost due to the fact that I have never taken a political thought or theory class different from the traditional lecture style in my 15 years of higher education. In this chapter, I would like to share my experiment with the role-play activity in my survey of western political thought classes for about 10 years. For my classes, I designed my syllabus rather different than usual and included role-playing activities. I prepared a newspaper consisting of five articles about ancient times (all made up and but relevant to texts) and basically asked my students to imagine themselves as either Plato or Aristotle sitting in a coffee shop, enjoying their morning newspaper, and discussing the news with the opposing party.

Overall, I believe that role-playing sessions provided necessary active learning environment for my classes. Throughout the years and in different classroom settings, my students did not only enjoy their discussion in a theatrical setting but also had the opportunity to apply theory to practical issues. The structure of the paper is as follows. First, I will briefly introduce experiential learning theory, Kolb's four stage of learning cycles and the importance of learning tools like simulations and role-playing for the adaptation cycle of learning. Second, I will discuss the challenges that political theory classes are facing in terms of interactive learning and possible ways to overcome them. Third, I will explain my experiment with the role-playing games and discuss advantages and disadvantages of integrating such an interactive technique in political theory syllabus.

2. Experiential Learning Theory and Role-Play

The psychological research and theory in the studies around learning have experienced a paradigm shift. The transition between behavioral to a

cognitive paradigm signals a new approach to constructive models of learning (Svinicki, 1999, p.5). The teaching strategies and motivation have changed because of the transformation of our approach to the desirable outcomes of learning in the classroom. Today, most of the instructors prioritize active, experiential and learner centered theory. “Indeed, some have asserted that true learning cannot take place when students are passive observers of the teaching process” (Poorman, 2002, p.32). One of the most influential learning theories that puts emphasis on the value of active learning is experiential learning theory.

Dewey as a leading American pragmatist argues that “genuine education comes from experience” (Ulrich, 1997, p.2). Following Dewey, experiential learning theory defines learning as “the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience” (Kolb, 1984, p.41).

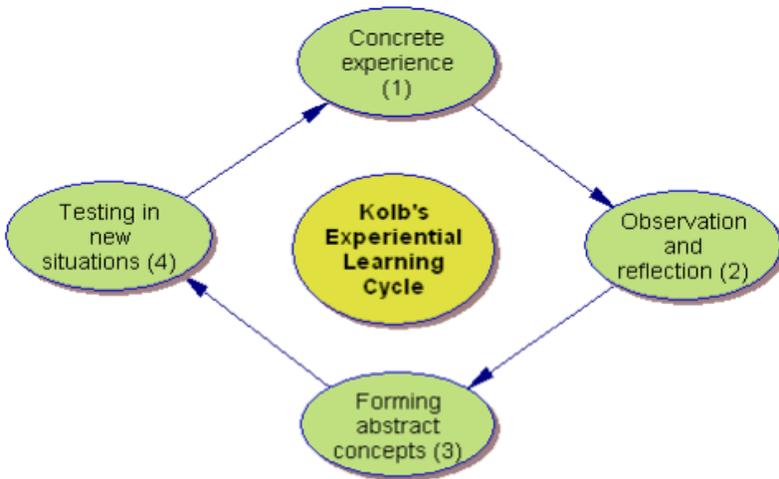


Figure 1. Kolb's Experiential Learning Cycle.

To illustrate, Kolb (1984) argues that learning occurs when four learning stages in cycle are followed by the instructors. These stages of learning are not sequential and can follow different order under different circumstances for different learners. The first stage is called *concrete experience*, which is a concrete introduction to a situation or a problem, which forms the basis for learning experience. It creates meaning and context, and the instructor should act as a motivator and

provide reasons for the importance of learning the subject to the students. The second stage is called *reflective observation* where students find opportunity to examine their *concrete experience* from multiple perspectives. The third stage is *abstract conceptualization* in which learner starts to understand the general concept behind their concrete experience by connecting the content to its general form. The fourth stage of learning is *active experimentation* where instructors act as a moderator to lead students to apply theory and analyze situations (Kolb et al., 2000, pp.3-5).

As the fourth stage indicates, the application of the knowledge constitutes an important part of the learning process. Thus, role-playing and simulation are important learning tools for the application of knowledge. “Role-playing is a teaching strategy that fits within the social family of models. These strategies emphasize the social nature of learning and see cooperative behavior as stimulating students both socially and intellectually” (Ulrich, 2002, p.2). In this sense, traditional lecturing by itself is not sufficient to complete the learning cycle. Interactive learning activities should be incorporated to the class curriculum especially for the understanding of abstract concepts and application of theory to practice. Next, I will focus on role-playing and simulation activities and explain the reasons why these interactive learning tools are important for learning process of students.

Aronson and Carlsmith (1968) describe the role-playing study as “an as-if experiment in which the subject is asked to behave as if he [or she] were a particular person in a particular situation” (p.26). Smith and Boyer (1996) list five basic advantages of active learning. First, simulation and role-playing help students to have deeper understanding of the issue at hand. To illustrate, Poorman (2002) argues that “integrating experiential learning activities in the classroom increases interest in the subject matter and understanding of course content” (p.32). In this sense, role-playing can actually help instructors to bring life to the seemingly ancient subject and get students to interact with the materials as if they are current and relative (Rivera et al. 2008, pp.300-3001).

Second, role-playing can be helpful to encourage students to be more active in the classroom. Third, the subjects learned by the active learning methods become more memorable for students. Fourth, role-playing activities improve collaboration between students and lastly help students to develop speaking and presentation skills. In addition to the improvement of communication skills, Poorman (2002) argues that role-playing teaches empathy and an understanding

of differences between opinions. Therefore, “the literature clearly supports the view that a well-crafted simulation can be a useful and popular teaching tool” (Frederking, 2005, p.387). Next, I will discuss how we can incorporate these active learning methods to the political theory classes.

3. Political Theory Classes and Role-Playing

According to Moore’s survey on the state of political theory, political theorists are not interested in incorporating the interactive learning strategies into their classes. “It is clear that political theorists have generally not adopted many of the innovations in teaching that the literature on teaching and learning has both investigated and celebrated over the past 20 years. As explained above, political theorists have largely not embraced civic education, service-learning, simulations, dramatic enactments, the use of film in the classroom, blogging, the creation of wikis, distance education, differentiated instruction, or the use of presentation software” (Moore, 2011, p.124).

Instead, political theory classes generally tend to be structured in a traditional university lecture style. This lecturing style is based on behaviorist theory of learning, which is centered on transmitting information to the passive learner. Generally, in a lecture styled classes, “students struggle to remember various isolated details and the lecturer appears as a remote authority rather than participating in a community of learning with his or her students” (Schaap, 2005, p.47).

As shown above, interactive tools are essential for learning. There are several reasons why political theory classes usually do not employ these experiential learning strategies. First, the abstract content of political theory classes makes difficult to plan and implement games and simulations. The nature of the subject matter leads instructors to focus on classroom discussion. However, students usually have hard time to understand let alone critically discuss the subject matter. At the end, classes are perceived to be boring by students because of the lack of active learning.

Moreover, most of us are caught up with the immense material that we must cover and “have trouble getting beyond the ‘just the facts’ content coverage and into higher-level, critical historical thinking, especially because of the limited class time available” (Vogler and Virtue, 2007, p.55). Because of these reasons, undergraduate level students may find introductory level courses on the history of western political thought rather dull and irrelevant. I believe that we must

change this ill-founded perspective on political theory classes by incorporating role-play games into our curriculum.

Role-playing games are actually not that unusual to the classes of history of political thought. There is a popular historical simulation series called *Reacting to the Past*. “The series provides an ingenious way for students to explore the interaction of political theory and politics in the context of key historical events” (Gorton et al., 2012, p.51). Gorton and Havercroft (2012) have employed *Reacting to the Past* simulations to teach political theory courses and argue that simulations effect students’ involvement, excitement and interaction (Gorton et al., 2012, p.51). However, these simulations are semester long and necessitate long pre-semester preparation and complete restructuring of the class. As a new teacher, I could not afford to structure my class completely different from what has been done so far; so I decided to design a role-playing game that would suit and complement the standard survey of western political thought syllabus. In the final section of this paper, I will explain the role-playing game activity that I designed and discuss merits of this venture for the student learning.

4. A Case Study: Bringing Back the Philosophers from the Ivory Tower

My basic aim in designing the role-play activity for my syllabus was to get students to apply the ideas of major political thinkers into practical political events. The reason why I thought role-playing would be a good strategy emanates from my strong belief that one can deeply understand the underlying logic behind the abstract ideas on politics only by putting themselves in the context and mind setting of the philosopher they study.

While designing the game, I tried to follow McDaniel’s (2000) four steps strategy (p.357). According to McDaniel, the success of each role-play activity depends on four essential steps. First, role-playing activity depends on the information that students have. Without prior knowledge, students cannot be expected to engage in critical discussion. Within this context, I reserved two weeks (week 5 and week 11) for the role-playing activity that I named *Bringing Back the Philosophers From the Ivory Tower* in the syllabus. In the role-paying activity sheet that I distributed in week 4, I defined the objective of the activity as follows:

This is a role-playing game simulation developed to contribute students' understanding of ancient political thinkers specifically Plato and Aristotle. The game's basic objective is to encourage students to actively elaborate historical and political ideas. This game is staged in Ancient Greece around 485 BC. Students will be expected to imagine themselves in a coffee shop and reading their morning paper. First, they will react to the news from either Plato's or Aristotle's perspective. Second, they will have a discussion with the other party why they think their reaction is correct.

Before the role-play activity, I tried to give as much information as possible about the historical context, the priorities of the philosophers and their understanding of the basic political concepts. Thus, during the first five weeks of the class, I gave a comprehensive account of Plato and Aristotle's political thought and provided necessary information about historical, political and socio-economic structure of Ancient Greece. Students were reminded about the game in each class session. According to McDaniel, the second crucial element for the design of a role-play activity is to include conflicting perspectives to ensure student involvement (McDaniel, 2000, p.358). That is the reason why I picked Plato and Aristotle in the first session of role-play.

The third element is to set up a specific situation where student can directly adapt their roles and understand the situation (McDaniel, 2000, p.359). In this context, I decided on a simple plot where students imagined themselves reading a newspaper in a coffee shop. At this point, the newspaper became the focal point of the role-play activity. It was challenging for me to prepare the newspaper articles because I wanted to guide students in a flexible way to unleash their own creativity. This is also McDaniel's final step for a successful role-play design, which advocates instructor's limited involvement to enable students to take their own path to understanding (p.360).

While creating the newspaper articles, I want to present so called ancient time news by giving reference to a popular song. For example, I wanted my students to discuss the relationship between poor and rich from Aristotle's and Plato's perspective and wrote the news as follows:



Figure 2: Sample from the Newspaper

Three class sessions were reserved for the role-playing game. For the first game session, I introduced the rules of the game and my expectations from them. For the second game session, I provided a preview of the game's historical setting, two possible roles that students may play and the newspaper articles that they are going to react to. I explained that the roles are going to be distributed by a lottery and distributed name cards to students after the lottery.

For the third session, I assigned two group activities. First, a group of three students with the same role came together and talked about their possible reaction. This discussion took 15 minutes. For this session, I guided them by providing questions like these:

1. What would Plato or Aristotle's response be to that particular news? Why?
2. How would he defend his response/criticism/argument?

After the first group work, a group of four students (2 Platos and 2 Aristotles) came together and had a discussion about their conflicting views on the same news for 25 minutes. At the end of their discussion, students were expected to outline the differences and similarities between Aristotle and Plato. At the end of the class, I gave information about how this activity will be graded and how to write an assessment paper as follows:

4.1. Requirement and Grades

1. Arguments presented verbally or written in regard to the materials should be informative, creative and persuasive. Instructor will notice the superficiality of engagement, which will have negative effects. To avoid that, students need to have strong and persuasive arguments and/or evidence.
2. Class participation is very important. Especially, reacting students must express their arguments and evidence in the classroom to achieve their game objectives.
3. Reacting players should always remember that what other players say or do is their role as a part of the game and that there are no personal feelings involved in their arguments. For that reason, students should identify themselves by their game names and roles. They should also address other students with their game names.
4. One assessment paper (1 page, single spaced) and active student participation are required.

Assessment paper and participation in the group work will constitute 5% of your overall grade for this class.

4.2. How to write an assessment paper?

1. In the introduction, write down the name of the philosopher you played
2. Choose three newspaper articles
3. In each paragraph, focus on one news, explain your reaction to the news and your discussion with the opposing partner
4. In each paragraph, briefly mention the theoretical justification of your reaction
5. In the conclusion, sum up your overall experience (Did this game help you to understand Plato more? What can be done differently next time? What was good about it?)

5. Conclusion

Overall, I am glad that I took the risk and incorporated role-playing activities in my first class. I realized how a simple method could change the students' perception of the class. It was challenging since I have to come up with the overall design of the activity but it was also rewarding.

Through their assessment papers, I collected feedback from my students about the activity and received plentiful positive reaction. After the role-play activity, my students' understanding of the abstract political concepts has deepened. Through comparing two opposing philosophers, they had the opportunity to see the foundation of philosopher's ideas. They realized the importance of history for the construction of political ideas on basic issues like freedom, equality etc. Most important of all, they understood the contextual application of highly abstract political concepts.

Moreover, I observe that students were really having fun while actively applying what they have learned in the classroom environment. They finally socialized with each other. They learned each other's names. Their argumentative skills have improved in a secure environment. For sure, there were some setbacks and challenges throughout the activity. For example, the preparation of the newspaper articles took more time that I have had bargained for. Also, I realized once again that things that I find funny are not always funny for my students. That is the reason why I got my students prepare the newspaper articles for the social contract newspaper with their groups for the second role-play activity.

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CHAPTER 9

COMPARISON OF KAHOOT! AND PAPER-PENCIL TESTS IN TERMS OF SECOND GRADE STUDENTS' ACHIEVEMENT LEVELS AND OPINIONS: A CASE STUDY

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1. Introduction

As in all fields of our lives, there is a rapid digital transformation in education. Web 2.0 learning tools are communication tools that allow mutual information sharing. With Web 2.0, internet users have come to a position where they can leave unilateral communication and change the content of the web. Web 2.0 is the latest developed version of internet and Web technologies (Bozkurt, 2013). With the pandemic, WEB 2.0 learning tools have started to be used more in digital learning environments. Kahoot! is a WEB 2.0 learning tool that allows creating online exams through computerized questions. Since Kahoot! is a new learning tool, it is seen that many studies have been carried out recently on its use in mathematics education (Curto Prieto, Orcos Palma, Blazquez Tobias & Leon, 2019; Kerrigan, 2018; King, 2017; Setiawan & Soeharto, 2020; Teotonio, Araujo & Santos, 2020) and other lessons (Chiang, 2020; Licorish, Owen, Daniel & George, 2018; Mete & Batıbay, 2019; Tsihouridis, Vavougios & Ioannidis, 2017; Zarzycka Piskorz, 2016). However, little is known about comparing Kahoot! with paper-pencil tests, one of the traditional measurement tools, in mathematics education.

1.1. Theoretical Framework

Kahoot! is a popular game-based learning platform and has 70 million monthly active users (Wang & Tahir, 2020). It provides the opportunity to create, share and implement online exams in a competitive environment for teachers. In the Kahoot! tests, the students answer the questions within the specified time. It scores the correct answers according to the answer time by taking the exam without the need for students to open an account (Siegle, 2015), and the students with the highest scores are determined at the end of the game. With the aims of making learning fun, interacting with students through games, and unlocking the learning potential of each student, Kahoot! is basically free (Chiang, 2020). It can be an alternative to traditional classroom and formative assessment activities (Wang & Tahir, 2020). This program is an educational tool that includes student response systems (SRSs) and game-based learning (Wang & Tahir, 2020). In the literature, it has been found that game-based student response systems improve student participation and classroom dynamics and positively affect learning performance (Caldwell, 2007; Licorish et al., 2018; Sharples, 2000). Kahoot!, as a student response system, also increases students' engagement and motivation in the lessons and provides a visual and detailed data source for teachers on formative assessment (Wang, 2015). However, to use this program in classroom environment; every student must have a phone, tablet, or computer with an internet connection (Zengin, Bars & Şimşek, 2017).

In the literature, there are different studies conducted on the educational aspects of Kahoot! (Curto Prieto et al., 2019; Dellos, 2015; King, 2017; Licorish et al., 2018; Setiawan & Soeharto, 2020; Teotonio, Araujo & Santos, 2020; Tsihouridis et al., 2017; Zarzycka Piskorz, 2016) and much evidence has been found of the educational benefits of it. Licorish et al. (2018) examined the effects of Kahoot! on classroom dynamics, students' learning processes, and motivations with semi-structured interviews. The results of the research revealed that Kahoot! enriches students' learning quality in terms of students' engagement, motivation, and classroom dynamics. Besides, it was reported that the use of educational games in the classroom minimizes the distractions and, in this way, increases the teaching-learning quality beyond what is provided in traditional classrooms. In other studies, it has been found that Kahoot! increases the motivation of students in Turkish lessons (Mete & Batıbay, 2019) and grammar learning (Zarzycka Piskorz, 2016). It has also been experimentally proven that it provides students

with a better understanding of electrical circuits from science concepts compared to traditional education (Tsihouridis et al., 2017). Moreover, King (2017) examined the experiences of a mathematics teacher regarding the use of Kahoot! As a result of the research, it has been revealed that teachers can benefit from Kahoot! in increasing retention and formative assessment. On the other hand, there is a need for research in the literature comparing Kahoot!, a new learning tool, with traditional paper-pencil tests.

1.2. Patterns

Understanding the structure of mathematics depends on examining the patterns and relationships that mathematics contains (Hargreaves, Threfall, Frobisher & Shorrocks Taylor, 2005). Therefore patterns are essential for seeing mathematical relationships, making generalizations, and understanding the structure of mathematics (Burns, 2000; Hargreaves et al., 2005; Lee, 1996). Patterns also have a crucial role in understanding mathematical concepts (Palabıyık & İspir, 2011). In many countries, numerical patterns are considered among the core components of the mathematics curriculums (Vale, 2009).

The rich and multifaceted pattern-making in pre-school children continue in school years, and the different forms of patterns in school lay the foundation for later learning (Therelfall, 2005). Number sense and mathematical exploration develop through patterns in children. Patterns develop children's sequencing and calculation skills and develop thinking strategies for basic operations (Reys, Suydam, Lindquist & Smith, 1998). In the early stages of primary education, with patterns, it is aimed to develop the children's generalization skills that are essential cognitive processes in acquiring concepts (Yeşildere & Akkoç, 2010). The relationships between concrete objects are also gained with patterns in this period (Uygur Kabael & Tanışlı, 2010). The pattern-algebra approach presented in the curriculum depends on students' ability to comprehend the concepts of generalized numbers and unclosed expressions (MacGregor & Stacey, 2007). However, a pattern-based approach does not automatically provide a better understanding of algebraic rules (MacGregor & Stacey, 1995).

Skills such as recognizing and continuing the pattern, developing rules for continuing it, and expressing it verbally and symbolically that students perform while solving pattern questions, lead students to think algebraically. Making generalization of the relationships in a pattern and expressing it with

a symbolic rule occurs with algebraic thinking, so there is a close relationship between patterns and algebra (Palabıyık & İspir, 2011). While much is known about children's literacy skills and the role of developmental sequences in math learning, little attention has been paid to the role of patterns, particularly in math learning (Orton, 2005). Studies show that students have learning difficulties in patterns; they have difficulty expressing and generalizing the relationship in the pattern algebraically (Becker & Rivera, 2006; English & Warren, 1995; MacGregor & Stacey, 1993; Orton & Orton, 1994; Stacey, 1989). Besides, it was determined that pre-service teachers also have difficulties reported in the literature about patterns. (Yeşildere & Akkoç, 2010). There are also studies investigating the strategies used by students and prospective teachers to generalize patterns (Stacey & MacGregor, 2000; Tanışlı & Özdaş, 2009; Tanışlı & Yavuzsoy Köse, 2011). However, there is a gap in the literature about the use of Kahoot! on patterns in mathematics education.

1.3. The Aim of This Study

Although there are researches conducted on middle school student's understanding and forming of patterns due to the relationships between number patterns and algebra, there is little evidence for younger students' understanding of patterns (Hargreaves et al., 2005). There are also studies investigating different aspects of Kahoot! in the literature as mentioned above. However, little is known about using Kahoot! on patterns and comparing it with traditional paper-pencil tests. Therefore, this study will fill the gap in the literature. In this respect, this study aims to compare Kahoot! and paper-pencil tests on patterns in terms of second-grade students' achievement levels and opinions.

2. Method

This study was carried out by using an explorative case study. A case study is an in-depth analysis and description of a situation (Merriam, 2009). This research aims to compare Kahoot!, one of the new generation measurement tools, and the paper-pencil tests that are traditional measurement tools.

2.1. Participants

The research was carried out in a city of the Black Sea Region in Turkey in the 2020-2021 education year. The participants of the study consisted of

twelve second-grade students selected with convenient sampling. Participants were selected voluntarily and consisted of seven female and five male students.

2.2. Data Collection Tools

The data were collected by Kahoot! tests, paper-pencil tests, and semi-structured interviews. Within the scope of the study, firstly, the acquisitions related to patterns at the second-grade level of the mathematics curriculum were examined (Ministry of National Education, [MoNE], 2018). The acquisition of patterns at the second-grade level was as follows; “*Identifies and completes the missing items in a repetitive geometric pattern*” (MoNE, 2018, p. 35). Afterward, a question pool about patterns was created considering the acquisition of the program. The questions were presented to a mathematics educator working in this field, and the suitability of the questions for that acquisition and the development level of the students was confirmed. Considering the development level of the students, the number of questions in the paper-pencil and Kahoot! tests were limited to five in line with expert opinions. Five of the pattern questions were written in the Word program, and a paper-pencil test was created. The remaining five questions were transferred to the Kahoot! and created a Kahoot! test. One of the questions in Kahoot! is shown in Figure 1.

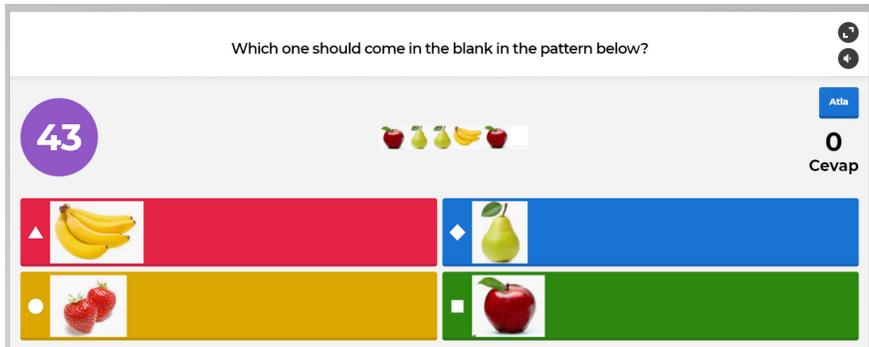


Figure 1. A sample Kahoot! question

A semi-structured interview form was developed to determine the students' opinions about Kahoot! and the paper-pencil tests. A mathematics researcher evaluated the questions in the form in terms of their suitability and comprehensibility for the development level of second-grade students. An example of the questions in the interview form is as follows:

“Can you compare the test you solved on this paper with the test you solved on Kahoot!? Which questions did you understand better? Which one did you like more? Why?”

2.3. Applications

In the applications, the students first solved the Kahoot! tests, then they solved the paper-pencil tests containing different questions about patterns. The students were studied one by one in the applications. After solving the questions both on Kahoot! and on paper, the students answered the interviews. In this way, students were able to compare the Kahoot! tests with paper-pencil tests, which are traditional measurement tools. Besides, in the interview questions, the students were also asked about their thoughts on the general features of Kahoot!

2.4. Data Analysis

The students' answers to the Kahoot! and paper-pencil tests were analyzed according to their true-false numbers. Kahoot! shows the success of the students at the end of the exam. The number of correct answers in the paper-pencil tests of the students was determined by the researcher. The total number of correct answers was analyzed in the SPSS program, and descriptive statistics such as mean and standard deviation were calculated.

The answers of the students to the interview questions were analyzed descriptively. Descriptive analysis is the summary and interpretation of data. In the descriptive analysis, the findings obtained by the analysis of qualitative data are organized and interpreted. The data can be summarized by arranging them according to previously determined themes or interview questions (Yıldırım & Şimşek, 2011). In the qualitative data analysis, firstly, the answers of the students to the interview questions were transcribed on the computer. Afterward, the students' answers were reread, the main points were determined and presented by summarizing within the framework of the interview questions. Besides, direct quotations from student opinions were included. In the study, students' names were coded. For example, S1F refers to the number one female student.

Besides, in order to ensure the reliability of the analysis of qualitative data, the analysis results of the interviews were presented to the expert opinion. An expert working in the field of education examined the transcripts and descriptive analysis results and stated the points he thought positive and

negative. Afterwards, a common point of view on different points was obtained by exchanging opinions with the researcher. So the qualitative analyzes were finalized.

3. Findings

3.1. *Comparison of Kahoot! and Paper-Pencil Tests in Terms of Students' Achievement Levels*

The descriptive statistics of the students' correct answers to the Kahoot! and paper-pencil tests are shown in Table 1.

Table 1: Descriptive Statistics of The Correct Answers in The Tests

	N	M	SD	Min	Max
Kahoot! test	12	4,25	0,75	3,00	5,00
Paper-pencil test	12	4,41	0,51	4,00	5,00

As shown in Table 1, the means of the correct answers to Kahoot! ($M=4,25$) and the paper-pencil tests ($M=4,41$) are quite close and high. This result can be interpreted as the achievement levels of the students in both tests are close to each other, and the difference between the means is not considerable. In addition, while the scores of the students on the Kahoot! test varied between 3,00 and 5,00; the minimum score they got from the paper-pencil test was 4,00 and the maximum score was 5,00.

3.2. *Comparison of Kahoot! and Paper-Pencil Tests in Terms of Students' Opinions*

When the students' answers to the interview questions were analyzed, it was revealed that they found Kahoot! more enjoyable than the paper-pencil tests. All of the students stated that they liked Kahoot! and that they solved it more willingly. They described the questions in the paper as boring. At the same time, the students found Kahoot! effective and useful and stated that this program helped them to understand the questions on patterns. Some of the students' opinions are as follows:

"It helped me to understand the questions better than the questions on the paper" S4M.

"[Kahoot!] It is better, fun, no need to write" S7F.

“This is better [Kahoot!] because I do not understand like grown-ups write” S9F.

As a result of the data analysis, it has also been determined that Kahoot! motivates the students more to solve questions. It was seen that Kahoot! is more entertaining for students than paper-pencil tests, which is a traditional measurement tool. The interviews also showed that the students emphasized the time and competitive environment in Kahoot! Examples of students’ statements on this subject are as follows:

“Kahoot! has time; it is necessary to solve immediately” S8M.

“It is good that there is time; it seems like there is a competition; I think I need to finish it right away when solving it” S10F.

A student (S2F) expressed her thoughts on Kahoot! as follows:

Researcher: Which test is better? Kahoot! or the test on paper?

Student: This is better [Kahoot!]. The teacher always does it, but I was never first.

Researcher: But you came first in this exam.

Student: Because this is easy. Let’s do another Kahoot!

Researcher: Should I prepare it on paper or in Kahoot!

Student: Prepare it like this, in Kahoot!

Researcher: Why?

Student: Because that is how I like it.

Researcher: But it is easier for me to write on paper.

Student: But Kahoot! is easy for me.

Researcher: Does that make you learn the subject?

Student: Yes.

Researcher: Do you learn better from paper or Kahoot!?

Student: From that [Kahoot!]. I like it more; it likes a game.

Researcher: Well, isn’t there anything you do not like about it?

Student: None.

4. Discussion and Conclusion

Kahoot! is a digital game platform that enables teachers to create measurement tools such as tests and surveys in a competitive environment (Dellos, 2015). In this study, Kahoot! and paper-pencil tests were compared in terms of achievement levels and opinions of second-grade students. As a result of the research, it was found that the means of the students’ correct answers to both

pattern tests were quite close and high. This result revealed that the students showed similar success in the Kahoot! and paper-pencil test. Kahoot! did not enable students to give more correct answers to the questions. This result also showed that the students comprehended patterns well and showed high success in both test types. Students' high achievement in patterns can be seen as a positive result of the research because patterns are essential for the development of student's skills, such as seeing mathematical relationships, making generalizations, using algebraic language, and making proofs (Burns, 2000; Hargreaves et al., 2005; McRae Childs, 1995; Waring, Orton & Roper, 1998). However, as a result of the research, it should be noted that the mean of the paper-pencil tests was slightly higher than the Kahoot! test. This result may be due to the time in Kahoot! Because of Kahoot! allows users to determine the duration of the questions. The time given for each question in the Kahoot! may have caused the students to hurry and make more mistakes. However, it may also have resulted from the researcher not giving enough time, and it can be seen as a limitation of the study.

At the end of the research, it was also determined that the students found Kahoot! more enjoyable than the paper-pencil tests. Students stated that Kahoot! is more effective and useful. They found the paper-pencil tests boring. It was found that they solved Kahoot! questions more willingly. These results revealed the positive aspects of Kahoot! The results of the study are consistent with the literature. Studies have shown that students welcome the use of Kahoot! in their classrooms (Chiang, 2020; Plump & LaRosa, 2017) and that Kahoot! provides a better understanding of the subject, increases student engagement, and develops learning quality (Licorish ve diğ., 2018; Tsihouridis et al., 2017; Zarzycka Piskorz, 2016). Similar results were also found by Tetik and Korkmaz (2018). They applied gamification activities with Kahoot! to the technician candidates studying at the Vocational School of Technical Sciences for a semester. They examined the students' views at the end of the applications. Their study revealed that the students liked Kahoot! and found it fun and useful in terms of lessons. The results of this study also showed that Kahoot! increases student motivation. This result is also consistent with the results of studies (Licorish et al., 2018; Setiawan & Soeharto, 2020; Wang, 2015). Licorish et al. (2018) also found that Kahoot! increased student motivation and classroom dynamics. These positive results of the study show that the use of learning tools such as Kahoot! more in learning environments will develop educational outcomes.

Consequently, it can be concluded that Kahoot! is an enjoyable and entertaining learning tool that motivates students to the lesson. Therefore, Kahoot! should be used more in learning environments. Ensuring that primary school teachers use Kahoot! in their mathematics lessons can help primary school students with short attention spans and who get bored easily understand and love mathematics better. The importance of Kahoot! in primary school mathematics should not be overlooked. In this regard, it can be suggested to conduct studies investigating the use of Kahoot! at different levels of primary school and in different subjects. Besides, researches examining this program's effects with experimental and qualitative methods will guide to researchers and educators.

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CHAPTER 10

REASONING STYLES MODEL IN THE CONTEXT OF LITERATURE OF “PROOF SCHEMES”¹

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1. Introduction

Style is a very broad term and adjective concept in the education literature, and it can be found in many different forms associated with cognitive, learning, teaching, thinking, conceptual, tempo, modus vivendi, decision-making, and problem-solving styles, as well as mental styles, perception, and intellectual styles, to name a few categories. Many research has been carried out to differentiate between styles and skills and personalities (Nielsen, 2002, p. 21-23; Zhang, Sternberg, Rayner, 2002, p. 3-4.). Theoretically, cognitive style comprises unchanging attitudes, preferences, and habitual tactics that define how people respond to various circumstances, and these strategies determine personal styles such as perception, memory, reasoning, and problem-solving. According to Saraço (1997), cognitive style encompasses unchanging attitudes, preferences, and habitual strategies that determine how people react to different situations. Style research has its roots in studies of personality and individual characteristics, according to all of these sources. It is also challenging to synthesize all of the various styles into a cohesive picture since styles are context-specific, contextual, and generally flexible and adaptable reactions to dynamic circumstances (Duran, 2014). Styles, in this sense, are more automatic preferences than optional tactics, which are the counterpart of styles (Cassidy, 2004, p.421).

¹ The part of this research is produced from the pages of 63- 140 of the Ph.D. Thesis of Duran (2019) entitled as “Investigations of reasoning styles, cognitive distortions and critical thinking tendencies of teacher candidates (Ondokuz Mayıs University Faculty of Education sample)”.

Generally speaking, style may be described as the consistent and habitual preferences of a person that express themselves in a variety of ways. Such preferences are described as the distinct and habitual manner in which people process information, interacting with and interpreting facts and information in a variety of ways, such as problem-solving, thinking perception, and recollection in the context of behavior, attitudinal intelligence, personality, and ability as indicated by Nielsen (2002) and Sternberg & Zhang (2001). Even though learning styles, thinking styles, personality, and temperament are all distinct ideas, they are all linked to some extent. In this context, some educators believe that there is no such thing as a learning style since, in some of their experimental investigations, it has been discovered that exposure to specific visual and aural information has no impact on remembering. Learning, on the other hand, is a complex phenomenon that involves high-level processes such as reasoning and decision so that it is difficult to claim that “styles” are educational myths just by reducing it a particular definition or model. Furthermore, it is incorrect to believe that learning styles are the answer to all learning difficulties because it is a very similar claim to announce that a covid-19 cure has been discovered for all types of covid viruses. Of course, if there is a common mechanism, it is possible to develop a vaccine or method that is effective against all types of covid-19. However, it should not be forgotten that even if such a vaccine is developed, it should be unique due to the differences in the structure and interaction of different types of mutated viruses. The same is true for claiming that a solution for a specific idea is a solution for everything in the area of educational sciences at this time. In this respect, in this chapter, the concept of reasoning style developed by authors is investigated since it is seen that reasoning style is mostly used in the field of science history and philosophy when the literature is examined (Hacking, 1992/2002; Bueno, 2012; Gültekin, 2013). However, it has been seen that the existing models of reasoning styles are not sufficient with the educational literature review. For this reason, reasoning styles are discussed based on other types of learning styles models as well as researches on reasoning.

2. The Model of Reasoning Style

When it comes to scientific results or particular phenomena, a style of reasoning is a pattern of inferential relations that is used to choose, evaluate, and support evidence for those results or phenomena. The reasoning styles model is a categorization created by Duran and Şentürk (2019), Duran (2019), Duran and

Özer (2017), Duran (2017), and Duran (2014). In this respect, reasoning styles can be defined as particular and habitual preferences of individuals to make arguments.

There are two kinds of reasoning, as theorized, according to this model: inductive reasoning and deductive reasoning as the organization of the arguments. Deductive reasoning entails the logical application of logical rules, even while maintaining the secured nature of truth: the execution of rules is regulated to propose one set of acts rather than another set of activities (Magnani, 2009). Induction, also known as inductive reasoning, is a form of reasoning in which the conclusion is a generalization that is broader than the scope of the original assumption. According to Özlem (2004), induction is a process in which a judgment is formed regarding a total of events or things based on the presence and togetherness of certain events or objects. In this reading, the two forms of reasoning, inductive and deductive, are opposites since their respective rules fulfill opposed tasks.

In addition, there is an inference dimension to reasoning. Though the terms inference and reasoning are frequently used interchangeably, they are distinct since the inference is reasoning based on specific evidence or signs. In this context, an inference may be divided into two categories. It is possible to distinguish between two types of inference: empirical and analogical inference, which is more concrete, factual, and domain-dependent, and hypothetical and metaphorical inference, which is based on assumptions and representations and can be characterized as more subjective and thus domain-independent logical inference, which is more abstract and non-factual. The empirical inference is a kind of descriptive inference that is completely based on the sensational information provided by the stimulus. The empirical inference relies on reasoning produced by students based on certain physical facts or sensory experiences, as explained above (Harel and Sowder, 1998). The soundness of hypothetical inference is contingent on specific premises and assumptions. As a result, the two are conceptually opposed. While analogical inference is a kind of inference that is based on the commonalities and similarities of ideas or things, the metaphorical inference is a type of inference that is conducted via the use of different symbols and signs to represent concepts or objects.

The inference types can be understood in the context of semiotics. A sign is a communication operation that represents or implies a "thing" (an object, a word, etc.). The sign serves as a stimulant. The memory image that it elicits in

our minds is linked to an image of another stimulus in our minds. A tangible (physical) thing, the “signifier,” exists in the interpretation process of the sign and represents the condition of the sign before it is assigned a meaning. The signified is conveyed as a message (meaning or idea) that is intended to be communicated to the receiver. As a result, in semiotic analysis, the signified is recognized as “what the sign refers to,” while the signifier is regarded as “what the sign physically represents.”(Akbaş, 2019). In this respect, if the inferences are based on signifiers and flow from signs to signified ones, it can be called empirical inference. If the inference begins with signified and flows from sign to signifier, it can be called hypothetical inference. If the resemblance between signifier and signified converges to sign, it is called analogical inference. Finally, if the co-existence of signifier and signified is based on the sign, it is called metaphorical inference.

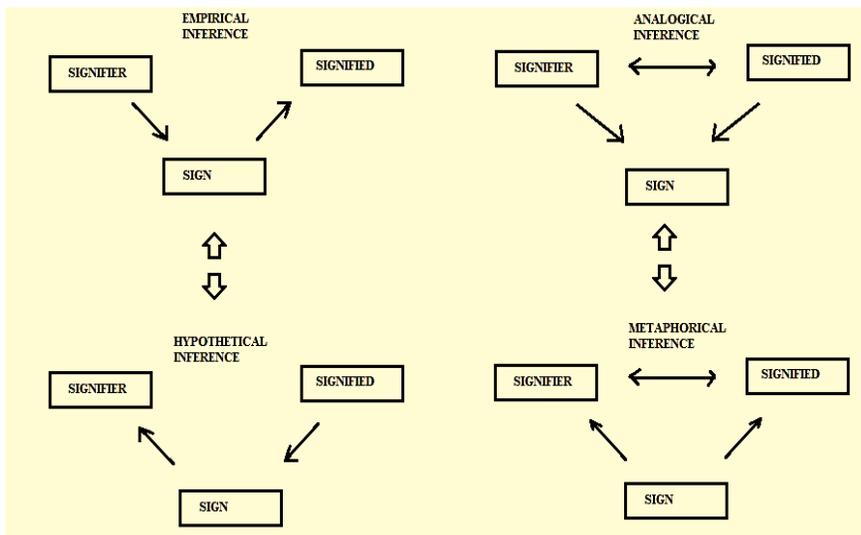


Figure 1: Inference Types in the Context of Semiotics.

Additional considerations in reasoning include causal and teleological arguments, both of which are important components of rational thinking in the form dimension of reasoning styles. Although causality may be described as describing events or ideas in terms of a particular cause-effect connection, a teleological viewpoint can be characterized as understanding events and phenomena in terms of a certain intention. In this respect, individuals can mold their arguments in causal form or teleological forms.

There are additional types of reasoning that may be divided into two categories in the context of the operational side: regular or formal and informal logic. The general concept of formal reasoning may be described as the procedures used to assess logical arguments. When the problem is formal, participants are provided with premises and asked to deduce whether or not the conclusions are correct (or, less frequently, to generate valid conclusions). In other words: Basically, these problems are well stated; there are no extra resources needed to get the right solution. Unlike many informal reasoning issues, however, informal reasoning questions have no clear definition, and their answers have nothing to do with logic. People use informal reasoning all the time in day-to-day life (Ohm, 2005). In informal logic, people are attempting to construct a logic that fits this goal. The argument, evidence, proof, and justification are all used in combination with an instrumental perspective that focuses on their effectiveness in real-life argumentation².

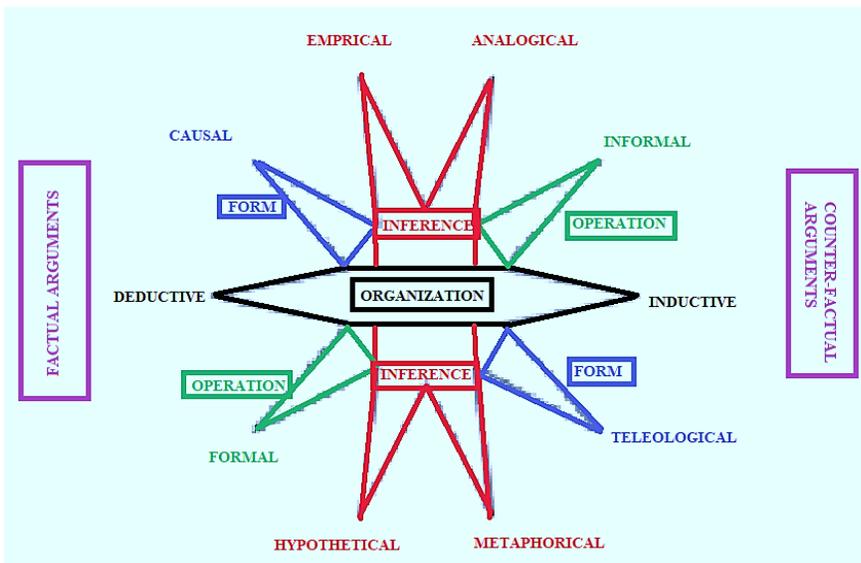


Figure 2: Reasoning Styles Model

Finally, factual and counter-factual argumentation can be given as two pillars of the reasoning styles. Since conditionals in the factual world are defined as referring to the potentialities for the real world, and counterfactual conditionals are defined as referring to the potentialities for the counterfactual world, it is appropriate to evaluate factual conditionals as referring to actual possibilities,

² <https://plato.stanford.edu/entries/logic-informal/> retrieved from 20.08.2021

and counterfactual conditionals as referring to counterfactual possibilities, which is to say, previously conceivable scenarios or occurrences that didn't occur. To put it another way, factual conditionals are "truth-functional," while counterfactual conditionals are not. In logic, a truth-functional conditional (also called a "material conditional" after its counterpart) is true when both of its clauses are true, false when the if-clause is true but the then-clause is false, but otherwise, it is true as well as the other clauses (Quelhas, Rasga, and Johnson-Laird, 2018). In this respect, teleological, inductive, and informal arguments are more likely to produce counter-factual arguments than causal, deductive, and formal arguments but it should be noted that this is not a strict rule.

The factual and counter-factual distinction is important not only in daily argumentation but also in the creative process of doing science. For example, it is possible to employ a mathematical proof to (i) verify a result; (ii) communicate to and convince others of the preceding; (iii) discover a result; and (iv) organize outcomes into a deductive system. It is not clear from the history of mathematics if the deductive proof tradition has been followed continuously. In the 18th and early 19th centuries, European mathematics followed a heuristic proof tradition that was fundamentally comparable to the Indian and Chinese proof traditions. It is possible to characterize the evidence traditions in these later civilizations as "convincing demonstrations" or "explanatory notes" that served to both convince and enlighten, and which addressed at least two of the purposes of proof of (i) and (ii). Even the famed mathematician, Gauss, utilized plausibility arguments in his proofs as late as 1799, according to some sources (Almeida, 2003, p.479). Therefore, reasoning must encompass both factual and counter-factual dimensions of the argumentation as well.

To sum up, what distinguishes the notion of reasoning style in the philosophy of science from the concepts of paradigm and episteme in educational sciences is how it varies from the concept of thinking or learning style in educational sciences. Learning styles are a notion that describes how a person likes to learn and displays their preferences in the learning process. Visual, auditory, and tactile learning styles are the most well-known types of perceptual learning styles, and they are the most common types of learning styles. Since the learning process is the desired process, it involves processes such as reasoning and deductive reasoning. However, while looking at the literature, it may be concluded that there are styles that indirectly interact with these styles rather than models that contain direct reasoning styles. Examples include concrete

experience in Kolb's learning styles or Gregorc's learning styles, which lead toward an inferential reasoning style known as empirical/empirical inferential reasoning, which is frequently employed in philosophy. The hypothetical and metaphorical inferential reasoning that is frequently employed in philosophy is represented by the abstract conceptualization in Kolb's learning styles and the abstract dimension in Gregorc's learning styles. In Kolb's learning styles, it may be stated that the active experiencing dimension contains induction and that the reflective observation dimension includes deduction to a lesser extent. It should be emphasized, however, that reasoning style is beyond the portion of these dimensions. Therefore, the reasoning style model is a need for better understanding the learning and teaching process in this respect.

3. Considering the Reasoning Style Model in the Context of Literature

Indirect confirmation of reasoning styles has been found in certain research. Almeida (2000), for example, performed research to uncover the views of undergraduate mathematics students about mathematical proofs. It was established via the research that students were split into four distinct groups based on their views of the evidence, as indicated in Figure 2, and that the results of the study were published. Students are split into four groups: type A, type B, type C, and type D.

Information about these students' proving styles is presented below and visualized in Figure 2 through the model in Figure 1 developed in this study. According to Almeida (2000)'s study students' perceptions about proof may be categorized by four types:

Type A: The student recognizes the need of working with formal proof and rejecting informal proof, but he or she is unable to meet the high standards of formality required by his or her proof procedures. In this respect, type A prefers formal operation but s/he can't present his arguments in a deductive, causal way.

Type B: The student acknowledges the need for rigorous proof, but is only using informal proofing techniques while learning the techniques of formal proof. Therefore, Type B realizes the formal proofs but prefers informal ways to show his arguments.

Type C: The students rely on intuitive and empirical reasoning. Formal evidence is seen in terms of passing exams, according to this viewpoint. That is, the students prefer to use empirical and analogical inferences to show their arguments.

Type D: The learner recognizes the need for formal proof, but he or she is unable to see it as anything more than symbol manipulation. Dissatisfaction with proof is caused by a lack of comprehension. In this respect, students prefer to use symbolic manipulation with metaphorical inferences.

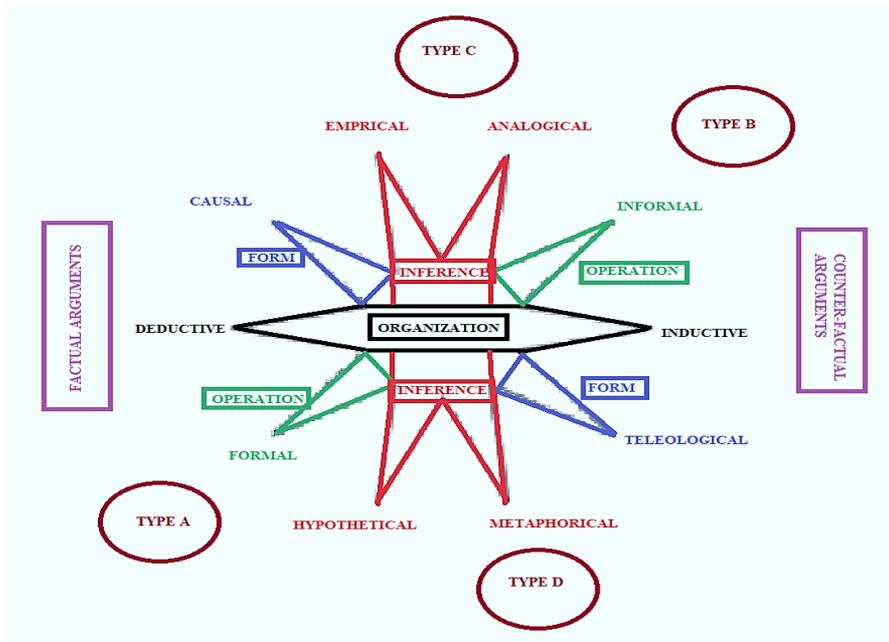


Figure 3: Adaptation of Almeida (2000)'s Study To Formal Reasoning Styles Model

Miyazaki (2000) created a categorization system that is comparable to this one. To demonstrate his point, as seen in Figure 3, Miyazaki grouped them into four categories, which he labeled “proof A,” “proof B,” “proof C,” and “proof D.” In this model, two categories are given in each of the axes of contents and representation. To ensure that the categories on an axis are distinct, one category should have nothing in common with the other. It is possible to divide reasoning into two types, which may be found on the contents axis: ‘inductive reasoning’ and ‘deductive reasoning. A functional language of demonstration, drawings, and/or manipulable objects are included in the representation axis, which is divided into two categories: “a functional language of demonstration” and “a language other than a functional language of demonstration, drawings, and/or manipulable object.” It is possible to create four fundamental levels by merging two categories in each axis (Miyazaki, 2000).

Table 1: Proof Types of Miyazaki (2000)

	Contents		
Representation		Inductive reasoning	Deductive reasoning
	A functional language of demonstration	Proof D	Proof A
	A language other than a functional language of demonstration, drawings, and/or manipulable object	Proof C	Proof B

Using the model from Table 1 as a starting point, the model created in this research is shown in Figure 1. Deductive reasoning and the use of functional language are required for Proof A, which is a kind of proof that needs deductive reasoning and the use of functional language when demonstrating the proof. In contrast to Proof A, Proof B is proof that needs deductive reasoning but makes use of other language, drawings, or moving items to accomplish it. Proof C involves the use of additional languages, drawings, or moving objects in the course of constructing arguments that need inductive reasoning. Proof D is a kind of proof that necessitates the use of inductive reasoning and the usage of functional language in the proofing process (Figure 3).

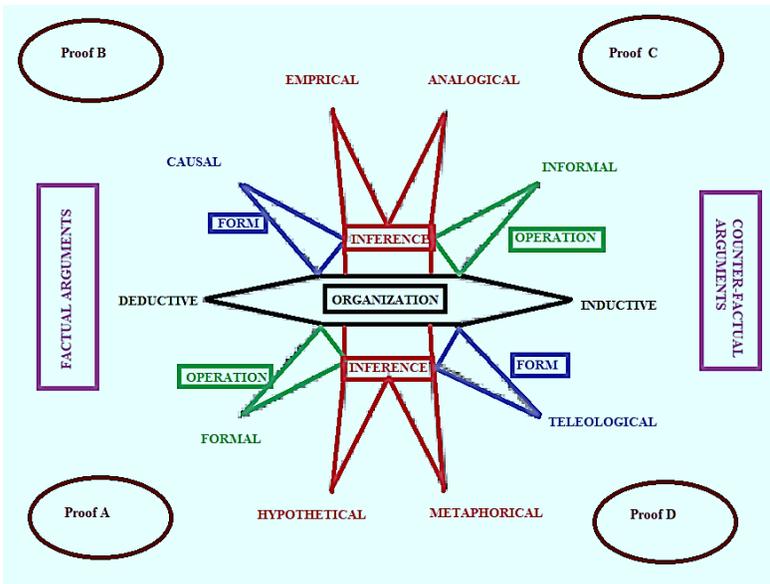


Figure 4: Adaptation of Miyazaki (2000)'s Study to Reasoning Styles

It should be noted that Miyazaki (2000) investigate these proof types in terms of formal operations and concrete operations so that the location of each label may change based on these criteria.

Raman (2003) aimed to reveal the opinions of university students and teachers towards proof in his study. He stated that university students and teachers had three types of thinking, heuristic, procedural, and key while making their proofs, as shown in Figure 4. A heuristic idea is the first kind of notion that is utilized in the proof-producing process. Informally held beliefs, such as those based on empirical data or portrayed visually, may give rise to ideas that are suggestive but do not necessarily lead to formal proofs in the formal sense. Heuristic ideas provide an impression of comprehension but not of conviction in the propositions they represent. It creates the impression that something ought to be correct (Raman, 2003). Consequently, Heuristic thinking is founded on informal understandings such as dependence on empirical data and demonstration via illustrations. Although this notion is intriguing, it does not lead to formal proof in any way.

A procedural idea is the second kind of concept that may be utilized in the proof-making process. Logic and formal manipulations are used to develop a concept, which leads to formal proof that is not connected to any informal understandings or conceptions. Conviction about a procedural concept is different from the comprehension of it. It serves as proof that something is correct (Raman, 2003). In other words, a procedural way of thinking is founded on logical and formal manipulations that lead to formal proof without relying on informal understandings to achieve the goal. When something is shown to be true, it provides the impression of convincing but not comprehension.

Finally, a key concept is the third kind of thought that has the potential to lead to proof production. A key idea is a heuristic concept that can be translated into formal proof that demonstrates an acceptable level of rigor. There is a feeling of understanding and conviction when the public and private spheres are linked together in this way. The most key concepts demonstrate why a certain assertion is correct (Raman, 2003).

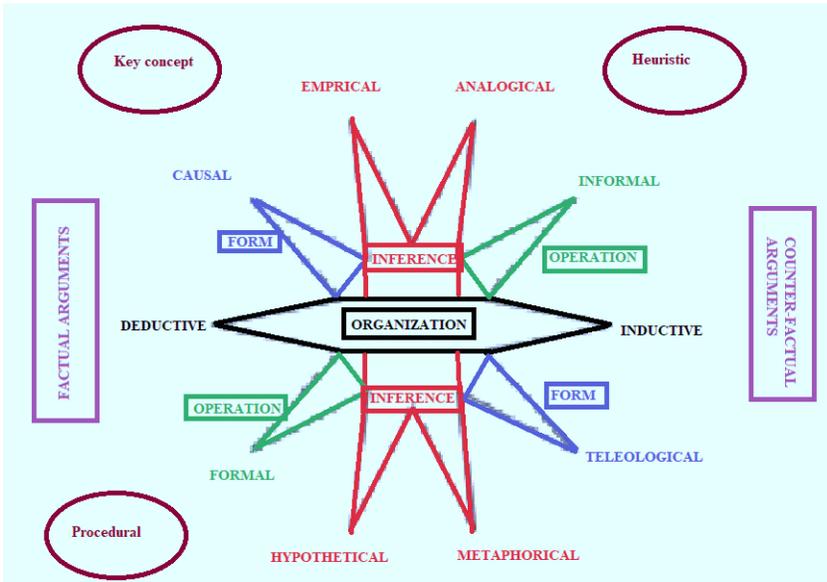


Figure 5: Adaptation of Raman (2003)'s Model to Formal Reasoning Styles Model

Harel and Sowder (1998) stated in their study that proof includes the processes of persuading oneself and others, and they introduced the concept of the proof scheme. According to them, Three definitions serve as the foundation for the concept of "proof scheme." The first one is the difference between conjecture and fact. A person may think of a statement as either a hypothesis or as a fact, depending on their perspective. Proving is the process through which a person (or a group of individuals) seeks to dispel any concerns regarding the veracity of a claim. Ascertaining versus convincing are two different things. To eliminate her or his (or its) own doubts regarding the truth of a statement, a person (or a society) must first ascertain its reservations about the truth of the assertion. Persuading is the process by which a person or a group of people attempts to dispel others' concerns regarding the veracity of a statement (Harel ve Sowder, 2007:6). The taxonomy of proof schemes consists of three classes: the external conviction proof schemes class, the empirical proof schemes class, and the deductive proof schemes class. External conviction proof schemes class includes the authoritarian proof scheme, ritual proof scheme, non-referential symbolic proof scheme. Empirical proof schemes class includes inductive proof schemes and perceptual proof schemes. The deductive proof schemes class includes transformational proof schemes and axiomatic proof schemes. It should be noted that some proof schemes don't fully fit the reasoning styles model's dimensions such as external proof schemes.

Table 2: Proof Schemes ((Hareland Sowder, 2007).

External conviction	Empirical	Deductive
Authoritative	Inductive	Transformational
Ritual	Perceptual	Axiomatic
Non-referential		

The external proof scheme consists of authoritative, ritual, and non-reference-symbolic proof schemes. In authoritarian proof, the person is persuaded based on authority, such as a book or a teacher. In ritual proof, one is persuaded based on the appearance of the argument rather than its content. The person with the referenceless-symbolic proof schema becomes convinced based on symbolic manipulations without reference. The empirical proof scheme consists of inductive (inductive) and perceptual proof schemes. Students with an inductive proof scheme quantitatively evaluate the accuracy of a claim in one or a few specific cases in order to convince themselves and others that a claim is true. The student with the perceptual proof scheme uses his rudimentary mental images to persuade. The deductive proof scheme is simply the demonstration of the validity of an assumption utilizing logical inferences. The deductive proof scheme consists of transformational and axiomatic proof schemes. People with transformational proof schemes care that the argument must be valid for all cases, that operational thinking is present, and that it is based on logical inferences. The axiomatic proof scheme has the characteristics of the transformational proof scheme (Harel ve Sowder, 2007). As it is seen, apart from authoritative proof, other proof types are included in reasoning styles.

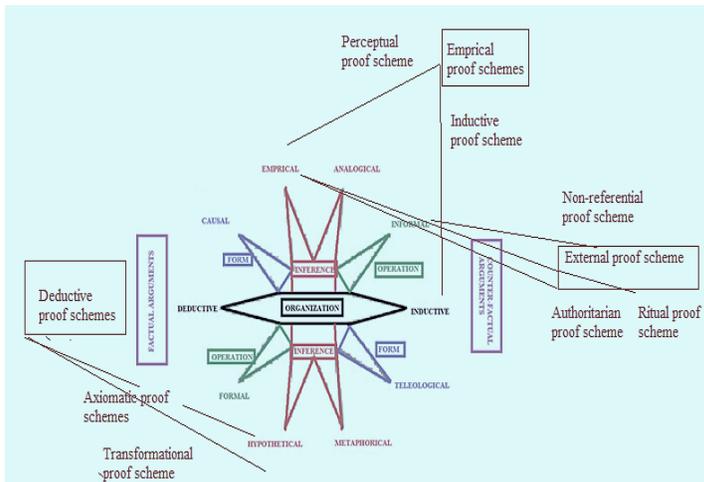


Figure 6: Adapting Harel and Sowder (1998)'s Model to the Reasoning Styles model

Tytler, Duggan, and Gott (2001) determined that participants put forward three dimensions of evidence depending on such as "1- Formal scientific evidence based on precise and factual data, 2- Informal scientific evidence (based on feelings and individual experiences) 3- Comprehensive assessment of issues affecting the evidence (environmental or legal relationships)". At this point, it can be said that this categorization of their reasoning styles is mostly related to the inference dimension.

As can be seen in the literature, different proof schemes are linked and consistent with the reasoning styles model. Their differences are thought to mainly result from the fact that they focus on proving while the reasoning styles model focuses on how to make arguments.

3. Conclusion

A style of reasoning consists of five dimensions (i) form of an argument (ii) inference of an argument (iii) organization of argument (iv) operation of an argument and (v) putting the argument in a factual or counter-factual outcome.

The form of an argument indicates its direction or goal when constructing the premises. The premises can be either constructed causally or teleologically. Causal arguments can be arranged from premises as cause to effect, and converse from effect to cause (Hastings, 1962). In there, simply defined, a cause is a force that has the ability to create an impact, while an effect is something that occurs as a consequence of an event or circumstance. The "cause to effect" structure refers to an argument whose conclusion states that certain events will occur and hypothetical causal arguments are more common types of this form. The second type "effect to cause" structure entails "sign reasoning" (e.g., "there are bear tracks, so there is a bear around") so that it creates "argument from evidence to a hypothesis" (Hahn, Bluhm, and Zenker, 2017: 7). Argument from Consequences -attempting to advocate or inhibit a specific course of conduct on the basis of the alleged consequences of that course of action- can be considered in the middle of both causal and teleological forms since the strength of an argument from consequences, therefore, is properly determined by considerations of probability and utility" (Hahn, Bluhm and Zenker, 2017: 11). The other form of an argument is termed as the teleological argument. When an argument makes reference to motives, purposes, or ends, it is called teleological. Such an explanation involves final causes in Aristotle's sense (Salmon, 1998, p.12). The final goal

of teleological arguments (or arguments from design) is to identify a designer, with the required intellectual qualities (knowledge, purpose, understanding, foresight, wisdom, intention) to create the objects with the specific attributes³. In this respect, teleological premises are based on marks or signs of design while causal forms are generally supposed to base on the evidence so that causal forms seek answers for “why?” questions while teleological forms seek answers for “how?” questions.

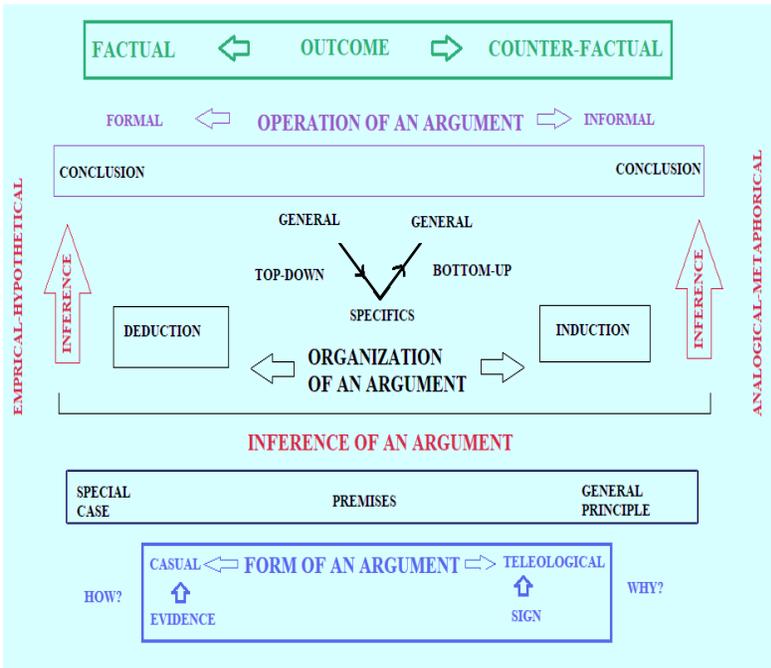


Figure 7: The Structure of an Argument in the Context of the Reasoning Styles Model

The second part of the reasoning style is related to the organization of an argument in terms of deduction or induction. In the organization phase, an argument is structured in either “top-down logic” (deductive) from general to specifics or “bottom-up logic” (inductive) or from specifics to general ways.

In the inference part of the reasoning styles, premises are constructed in four ways. Inferences from analogy are based on comparisons and resemblances. Inferences from metaphors are based on representations such as symbols, words that are synthesized in a way that has an abstract signified meaning which may have no or little connection with sign and signifier. Hypothetical inferences are

³ <https://plato.stanford.edu/entries/teleological-arguments/> retrieved from 22.08.2021

generally described as “if-then” statements that are based on premises that are related to abstract scenarios to make predictions while empirical inferences are based on premises that are related to senses and perceptions creating patterns and associations.

The third part of the reasoning style is to create formal or informal arguments. Formal arguments are based on procedures used to assess logical arguments while informal ones are not based on regular rules generally so that they have a random manner.

Finally, in the reasoning styles model, the arguments can be created either as factual or counterfactuals. That is they can refer to the potentialities for the real world or the potentialities for the counterfactual world. The “will/would” distinction can be given as an example for the distinction of factual-counterfactual arguments. In there ‘would’ marks counterfactuality. For example, “If that match is scratched, it will light.” is a factual or indicative form while the statements such as “If that match were scratched, it would light” and “If that match had been scratched, it would have lit.” counter-factual ones (Kaufmann, 2013).

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CHAPTER 11

AN ONLINE COMMUNITY OF TEACHER EDUCATORS: THEIR NEEDS AND CHALLENGES DURING THEIR PROFESSIONAL JOURNEY*

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1. Introduction

It is common knowledge that teacher educators make a significant contribution to education by helping teachers develop a professional identity and gain confidence in their teaching. They provide teachers with guidance through seminars, lectures, tutorials, and training courses. Hence, they have a key role in connecting policy and practice (cited in Moradkhani, 2017, p. 92). Teacher educators undertake many different types of work and roles, such as “teacher of teachers, researcher, coach, curriculum developer” (Ping, Schellings, & Beijaard, 2018, p. 94). They also have multiple professional identities, and they might perform different roles simultaneously (The European Commission’s report, 2013, p.8). In some contexts, even though they teach teachers, they might not even perceive their roles as teacher educators, and this may result in a lack of clarity about their professional identity. While this challenge may

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bring satisfaction and diversity in some contexts, some researchers described this profession as an ‘impossible job’ (Swennen and Klink, 2009, p.33).

2. Literature review

2.1. Teacher educators and their challenges during their professional journey

We may state that the skills of teacher educators differ from subject teachers and therefore they have to enhance different skills and abilities (Kwan & Shun, 2015, p.38). On the other hand, there is an ample amount of research about teachers; however, the literature for teacher educators is rather limited (cited in Smith, 2003: p.202). As a consequence, they have often been a neglected professional group in education (Celik, 2011, p.73). In a study by Ping, Schellings, and Beijaard (2018), they suggest that “a clear knowledge base essential for the work of teacher educators is lacking. Teacher educators feel both intrinsic and extrinsic needs to learn” (p.93). As regards to the challenges that teacher educators experience, it has been mentioned that there is a lack of international consensus for the policies and practices of teacher education (Schwille & Dembelé, Martial, 2007: p. 88). A European Commission report (2013) highlights the fact that there have not been many research initiatives about this profession, therefore policymakers and course designers do not have access to much data about their CPD needs (European Commission, 2013, p. 28). In addition, the research states that most of the time teacher educators have not been trained as teacher educators (as cited in Smith, 2003: p. 202). They enter the profession either after having taught for several years, and as a result they learn how to train teachers “on the job”. As a consequence, they may face the challenge of developing a new professional identity. It has also been stated that “most professional development of teacher educators is spontaneous, individual, and unnoticed by their superiors and even by the teacher educators themselves” (Smith, 2003: p.210). Research further indicates that “the most influential professional learning for teacher educators takes place in informal workplace settings” as a result of interactions within the team or department (Boyd, Harris, Murray, 2007, p.4).

2.2. Online communities of practice

An online community of practice (OCoP) is defined as “a group of people, who are brought together by a shared interest and with the aim of deepening their

understanding of an area of knowledge through regular interactions facilitated by computer mediated communication” (Bostancıoğlu, 2016, p.20). Through an online community, teacher educators can continue their own professional development beyond their institutional and national borders. When people discuss issues, share their stories and best practices, and feel confident to speak about their challenges with a group of colleagues, that’s how professional development takes place (cited in Smith, 2003, p.212). Moreover, with the help of learning networks, educators know when and where to seek information, feedback and support, through which they become “do-it-yourself” learners by managing their own learning (as cited in Forbes, 2015, p.151). It is stated that CoPs are based on social constructivism and Vygotsky’s Zone of Proximal Development (ZPD), in which, collaboration, negotiated meaning, and facilitation are the learning principles (Johnson, 2005, p.23). Vygotsky (1978) defined the ZPD as “the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (p. 86). ZPD involves interaction, joint collaboration and peer facilitation. These components relate to what members experience in a community of practice.

Garrison, Anderson, and Archer (2000) put forward the Community of Inquiry Framework that constitutes three elements: “Cognitive presence, social presence, and teaching presence” (p.89) in order to facilitate engagement and activity in a community of practice. They state that learning occurs as a consequence of the interaction of these three core elements. This framework suggests that in a community of practice, critical thinking should be developed for deep learning to take place. Collaboration is an essential component of cognitive development. It is emphasized that members should connect with the other members, and engage in “well-designed collaborative activities” (Garrison, Anderson and Archers, 2000, p. 92).

2.3. Needs analysis in an online community of practice

Needs analysis is defined as “the systematic collection and analysis of all information necessary for defining a defensible curriculum” (Brown, 2009, p. 16). According to Iwai et al. (1999), needs analysis “refers to the activities that are involved in collecting information, that will serve as the basis for developing a curriculum and that will meet the needs of a particular group of students”

(cited in Songhori, 2008, p.2). Assessing the needs is one of the essential stages of curriculum development. As Long (2005) states, “Just as no medical intervention would be prescribed before a thorough diagnosis of what ails the patient, so no program should be designed without a thorough needs analysis.” (p. 1).

Armstrong (2003) proposes the two key purposes of needs analysis. First, it provides us with a perception check. Within the context of this research study, the information we gathered helped us better understand the teacher educators’ CPD needs and backgrounds, and how the programme’s intentions were aligned with the community priorities. A second function of needs analysis was to produce guidelines that enabled us to make programme recommendations (p.176). Fenwick (1975) argues that needs analysis should include various stakeholders in the process (p.4). We may assert that for a robust curriculum, people in the curriculum process should take an active part in making decisions, therefore, researchers should gather the information about their needs, and this information should be analysed in order to develop an appropriate curriculum.

3. Aim of the study

In this research study, the primary goal was to understand the continuing professional development needs of an online community of teacher educators so that the findings would help develop a curriculum for that community. An initial step for curriculum development is collecting information which is commonly referred to as “needs analysis”. Consequently, the “Teacher educator needs analysis survey” was developed to identify the CPD needs of the community members. The researchers also aimed to understand the dimensions of creating an effective community of practice for teacher educators which would help the members connect with each other, share knowledge, seek solutions to the challenges they experience, and thus enhance their CPD. For this purpose the research question posed was “What are the needs of an online community of teacher educators for their continuing professional development?” Sub-questions were as follows:

1. What are the needs of the online community of teacher educators related to pedagogy, instruction, setting training objectives, content design, evaluation, and teacher training activities?

2. What are the topics that teacher educators would like discussed in the online community of practice for their continuing professional development?
3. What are the technical needs of the teacher educators in the online community of practice?

4. Methodology

The purpose of the present study was to investigate the continuing professional development (CPD) needs of teacher educators in an online community of practice (OCoP). These needs provided insights while developing the curriculum of the community. This was a descriptive study and data were collected through a needs analysis survey. The survey consisted of four parts: (1) General information which included demographic information about teacher educators in the online community of practice, their job roles, teacher training experience, activities and work contexts; (2) Teacher educators' continuing professional development (CPD) needs; (3) Topics of interests for teacher educators; (4) Teacher educators' digital competence in the online community of practice. The respondents indicated the extent to which they felt they needed to develop the defined knowledge, skills, and competencies.

Accordingly, the researcher designed a survey as the primary source and collected and reviewed some other data, such as the asynchronous and synchronous content, and used these as secondary data. Therefore, it is possible to say that a triangular approach was used in which the information was collected from multiple sources (Richards, 2001, p. 59). Other data sources used were:

- Discussion forum postings in the community
- Online survey feedback data from synchronous sessions, such as the community webinars
- Community help desk statistics

4.1. Study group

The present study was conducted with 94 teacher educators who were members of the British Council's Teacher Educator Community, which was a global online community of practice for teacher educators with more than a thousand members from all around the world. The respondents of the survey came from 34 different countries. There was a wide variety of roles of teacher educators amongst the

respondents that were investigated in the needs analysis survey. The rationale behind asking the members' job role was that since their continuing professional development needs were determined by their current roles and responsibilities, it was important to understand their perceptions and contexts regarding their current roles and identities.

The members consisted of 61% teacher educators (N=58), 53,2% (N=50) teachers, 24,5% online teacher trainers & e-moderators (N=23), 18,1% training consultants (N=23) and 18,1% university lecturers (N=17). The reason for the high teacher population (53,2%, N=50) was that most teacher educators had multiple roles and identified themselves both as teachers and teacher educators. The number of online teacher educators was also quite high (24,5%, N=23). Therefore, there were additional CPD needs related to online training. Moreover, the percentage of university lecturers was also quite high (18,1%, N=17), and we would expect their context to have an impact on their CPD needs as well.

The Teacher Educator Community consisted of a diverse group with more experienced and less experienced teacher educators with varying abilities and competencies: 22,3 % (N=21) more than 20 years of experience; 22,3% (N=21) 6-10 years; 19,1% (N=18) 1-5 years; 17% (N=16) 11-15 years; 9,6% (N=9) 16-20 years, and 9,6% (N=9) didn't have teacher training experience. This was an opportunity as each group might bring different perspectives, skills and knowledge base to the community.

Teacher educators in the community carried out a wide range of training activities. "Running teacher training and development" 59,6%; "Observing teachers" 55,3%, and "Giving feedback" 54,3% were the three most popular teacher training activities. These activities were followed by "Giving workshops" 54,3%; "Mentoring" 40,4%, and "Online teacher training" 36,2%. Moreover, 31,9% of the respondents worked as trainers of teacher educators, 26,6% as consultants, and 22,3% worked as educational researchers. 18,1% had not yet become a teacher educator. As regards to the types of education institutions that teacher educators worked for, most of the respondents, 23,4%, who were members of the Teacher Educator Community worked at State schools (N=22), 18,1% (N=17) teacher training institutions and 17,0% (N=16) Private schools. That showed us that teacher educators in the online community of practice were in all fields of education, and there was a rich participant profile with diverse cultures, context and backgrounds.

The Teacher Educator Community is for teacher educators in all contexts: pre-service, in-service, online and face-to-face. The main purpose is to provide a platform for teacher educators to connect with each other, share knowledge, and seek resolutions to the challenges they experience. Moreover, the community is expected to encourage and support teacher educators to engage with life-long learning and promote active engagement with equality, diversity and inclusion. The community offers teacher educators a varied range of continuing professional development (CPD) activities, including discussion groups, special interest groups, working with a mentor, sharing or accessing resources, live and recorded webinars.

4.2. Data collection tools and procedure

In the data collection process, a needs analysis survey was designed by the researcher. An early version of the survey was used in the pilot study and it was revised as a result of test-retest reliability method and feedback from three key experts and respondents. The first draft of the survey was piloted with 30 teacher educators to test its validity and reliability. Piloting and pre-testing the survey increased its reliability to a great extent. An invitation was sent to 900 members of the British Council Teacher Educator Community via email, as well as using the public “Announcement” discussion forum through the Community Learning Management System (LMS) in January 2019. The survey was open for two months and during that time 94 participants from diverse backgrounds responded. The results were then exported to the SPSS programme through an excel sheet to be analysed. In both Likert scale and open-ended questions, teacher educators shared their CPD needs according to their knowledge, skills and competencies, and the findings were analysed by referring to the following predetermined categories: “Pedagogy, setting objectives, content design, instruction, evaluation, and running teacher training activities”.

4.3. Data analysis procedure

In this study, a qualitative analysis was used for the survey and the data were presented. Open ended questions were analysed and presented separately according to the predetermined categories. Responses of the participants to the first and second research question were categorized under the following categories: “Pedagogy, setting objectives, content design, instruction, evaluation,

and running teacher training activities”. Responses of the participants to the third question were categorized under these categories: “Safety, security”, “online communication”, “data protection”, “navigating the platform”, “attending a webinar”, and “helpdesk”.

5. Findings

The findings showed that the primary needs of the majority of teacher educators in the community were focused on more practical aspects of teacher education and their daily practice, such as evaluation, content design, and instruction. For instance, ‘Being able to use different technologies in teacher education programmes’, ‘Evaluating the effectiveness of a training programme’, ‘Organizing professional development activities for and with teachers, i.e. Teacher Activity Groups and workshops’ were much needed areas. Other needs were ‘knowledge of educational psychology’, ‘helping teachers conduct action research’, and ‘developing teacher training content, i.e. writing content for a workshop’. On the other hand, ‘knowledge of child learning principles’, ‘the ability to write objectives according to teachers’ needs’ and ‘knowledge of learning theories’ were amongst the least needed areas.

The most requested topics were ‘online teacher training and e-moderation approaches’, ‘digital literacies’, ‘assessment’, ‘curriculum design’ and ‘mentoring’. There was a high demand for topics on online teacher training as a result of a high population of online tutors registered in the online community. Therefore, some resources and professional development activities were designed in the community in order to meet the needs of this emerging group. Respondents also indicated their need to improve their skills regarding evaluation of teaching, such as preparing an objective-based assessment tool, i.e. a rubric, a self-assessment tool, evaluation of teaching and providing feedback. “Motivating teachers” was one of the topics teacher educators indicated they needed to learn more about. Given the state of limited budgets at educational institutions, it has been a challenge for most teacher educators to keep teachers that they work with motivated and inspired.

Inclusive education was an area that most of the teacher educators stated they needed to learn about to some extent. This is an important topic for the British Council. The organization designs its activities and projects by prioritizing inclusion and offering a range of resources to help develop inclusive

practices throughout school systems and to ensure that inclusion occurs at all levels. Activities that were designed in the online community aimed to increase the awareness and understanding of teacher educators and there were conversations with teacher educators on their perspectives towards the issues of special education needs, using inclusive practices and education. The results of the survey confirmed that the online community should offer activities and resources on this topic.

Digital literacy was another topic that the majority of teacher educators indicated they would like to find out more about in the online community. With the advancement of ICT in recent years, more and more teacher education programs design learning environments and experiences for teachers that help integrate digital tools to maximize student outcomes. Mentoring was also indicated as a need for most of the teacher educators. In the community, there have been some activities designed on mentoring, such as the “Mentoring Special”, which provided teacher educators with an opportunity to engage in this topic in depth over a series of weeks through some developmental learning activities, such as mentoring opportunities with a partner, webinars and discussion forums.

Findings as regards to future webinars suggested that there was a demand for more practical tasks during the webinars. That means teacher educators would like to attend engaging sessions and workshops with practical examples rather than lectures.

As a result of this needs analysis, the following tables (Table 1. And Table 2) summarize the data about the continuing professional development needs of teacher educators in an online community of practice.

Table 1. Teacher Educators' CPD Needs by Mean Scores

CPD needs	Mean scores
Being able to use different technologies (apps, web tools, webinars) in teacher education programmes	3,574
Evaluating the effectiveness of a training programme	3,468
Being able to guide teachers about how to use technology in their classrooms	3,457
Organizing professional development activities for and with teachers, i.e. teacher activity groups, workshops for teacher professional development	3,446
Knowledge of educational psychology	3,436
Helping teachers conduct action research	3,372
Developing teacher training content, i.e. writing content for a workshop	3,361
Knowledge of teaching techniques	3,361
Fostering reflective practice in teachers	3,340
Preparing an objective-based assessment tool, i.e. rubric, a self-assessment tool	3,340
Knowledge of adult learning principles	3,319
Knowledge of educational policies	3,308
Providing feedback	3,265
Evaluation of teaching	3,255
Knowledge of learning theories	3,095
The ability to write objectives according to teachers' needs	3,063
Knowledge of child learning principles	2,819

Table 2. Topics of Interests by Mean Scores

Topics	Mean scores
Online teacher training and e-moderation	3,755
Digital literacies	3,734
Curriculum design	3,563
Assessment	3,478
Mentoring	3,457
Material design	3,446
Motivating teachers	3,436
Inclusive education	3,393
Observation and feedback	3,351
Lesson planning	2,691

6. Discussion

It has been stated that teacher educators have multiple professional identities and their professional area is extended to new roles and responsibilities, for instance a teacher educator might have a future sub-identity as a researcher (Swennen, Jones & Volman, 2010, p.141). This study also reveals that in the Teacher Educator Community, a wide variety of roles exists amongst members, including training consultant, lecturer, coach, curriculum head, mentor, materials writer, curriculum designer, writer, school owner and teacher who provides teacher development activities to colleagues.

In a research study about teacher preparation, Koster et. al. reveals the move to “a more experiential approach”, consequently, teacher educators would like to get involved in activities through which they engage with their colleagues rather than studying theory (Koster et al., 2008, p. 567). In another research study, Boei et al. (2015) stated that a programme that contributes most to teacher educators should include working with peers and interaction with practice (p. 363). Therefore, it would be useful to highlight these practical aspects of teacher education when designing a programme for teacher educators. Danielson and McGreal (2000) argue that many evaluation systems that we use today reflect the beliefs of educators back in time, in the 1970s when they were first developed (p.3), and the “traditional approach to teacher evaluation is no longer adequate” (p.7). Reddy et al. (2017) claim that recent evaluation reform has forced teacher educators to pursue new ways of teacher evaluation systems by understanding teachers’ needs, experiences and perceptions and suggest that teachers value collaborative communication in the evaluation process and constructive, clear and specific feedback (p. 49).

Similarly, a research study showed that “mentoring, counselling, coaching” were considered the most significant skills for teacher educators regardless of number of years in the training profession (Kandiller, Özler, 2015, p.440). Their recommendation was that trainer training programmes should cover “methodologies, techniques and procedures” without holding the assumption that teacher educators already have the underlying knowledge base (Kandiller, S., Özler, D., 2015: p. 450). In addition, the awareness to reflect was considered an important need for some respondents. Karagiorgi and Nicolaidou (2013) described the impact of reflective practice on the professional learning of a teacher educator (p. 792).

We may also conclude that the majority of the respondents lack ICT competency in being able to use technology in teacher education programmes and guiding teachers in how to integrate technology in their classrooms. Given the fact that ICT skills are a catalyst in 21st Century teaching and learning, its availability and inclusion in the teacher education curriculum is vital. The DigCompEdu Framework (2017) distinguishes six areas which focus on educator's professional activities. These areas should be considered when developing the curriculum and designing the scope of the online community for teacher educators, such as "using digital technologies for communication, professional development and collaboration; creating, sourcing, sharing digital resources; orchestrating the use of digital technologies in teaching and learning" (Redecker, 2017, p.16). In recent years, there has been a growing need to focus on the active use of technology to ensure "teacher experiences with educational technology are deep, program-wide and sustainable rather than one-off courses" (Borthwick & Hansen, 2017). Therefore, considering the importance of integrating technologies in education, teacher educators would like to be competent in this area and model the appropriate uses of the latest technology available in their teacher training and development activities. According to the digital framework proposed by Ng (2012), digital literacy has three dimensions which are "technical and operational skills to use ICT for learning and in everyday activities"; "the cognitive dimension" which is related to the ability to think critically" while handling digital information, and "the social-emotional dimension" which refers to "being able to use the Internet responsibly" such as using appropriate language, protecting safety and privacy (p. 1067). Moreover, webinars have proven to be very popular, therefore more webinars should be designed with a particular focus on the teacher educators' CPD needs. All of these dimensions might be essential for teacher educators at different levels of their continuing professional development journey.

Especially, "confidence in contributing to discussion forums" is essential to meet the members' continuing professional development needs. Social presence is understood as "the ability of people to project their personal characteristics into the community, thereby presenting themselves to other participants as real people" (Garrison, Anderson & Archer, 2000, p.89). When community members contribute and increase their social presence, collaborative learning takes place which can lead to deeper and broader learning. We believe that interaction can create effective learning environments with a strong sense of connectedness

which would benefit all of its members. Therefore, it is important to encourage the members' online presence so that they get the best out of the community. This can be done by developing discussions that drive to deeper levels of thinking; clarity of programmes and task design, and through some community building activities and events about topics of interests.

Furthermore, establishing their own Professional Learning Network (PLN) through the online community is an essential step for teacher educators toward deepening their CPD. In the past, teacher educators would connect only through face-to-face training courses, education journals, conferences, and other similar activities. Now they can develop professional relationships electronically without space-time constraints. Therefore, developing an online presence should be included in the community programme through activities that enable teacher educators to feel empowered to share, connect and grow their professional network.

This study is an important step in understanding the needs of teacher educators so that determining and analysing their demands, expectations and requirements would help for a planned programme of facilitated learning activities in an online community of practice. From the current study, we may conclude that the activities of an online community for teacher educators should have particular focus on the practical aspects of teacher education, such as "Instruction", "Evaluation", "Content design" and "Running teacher training activities".

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CHAPTER 12

DESIGN THINKING AND ITS REFLECTIONS ON EDUCATION

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1. Introduction

Educators, who want to develop their creative aspects and produce more innovative ideas, are looking for a new and effective way to achieve these goals in today's fast-changing and competitive business environment. It is possible to find innovative solutions in business life with a design thinking methodology that can be used by anyone who needs innovative and creative solutions, who want to find people-oriented solutions to their problems without being specific to any unit or group. The product-oriented approach of the past can no longer find a place for itself today. People-oriented solutions come to the fore not only in technology but also in all other fields; It is inevitable for companies producing solutions to shift their focus from products to people. People no longer buy products, but services that the product will provide. The importance of design thinking methodology emerges at this point. Design thinking uses designers' approaches to find solutions to the needs of innovation at the strategic, tactical, and operational levels and focuses on people. The methodology is innovative and willing to find people-oriented solutions to their problems without being specific to any unit or group. It can be used by anyone who needs creative solutions.

2. Theoretical Framework and Literature Review

2.1. Design thinking

Design thinking changed into a process involving the theoretical dimensions of various initiatives from a structure that designers make decisions based on their internal logic. Thus, the idea of design enabled even the ones who are not

designers to evaluate and synthesize problems via design-thinking and with a conceptualized and contemporary approach for them to use such an approach (Brown, 2008; Dorst, 2011; Kimbell, 2011). Design-thinking is regarded as a new method even for individuals who do not have prior scientific knowledge about art and architecture to solve complex problems in creative and innovative ways (Brown, 2008).

The researchers of design thinking have defined design in different ways. It is defined as an approach tackling ill-defined problems, production, visualization and a cooperation model (Buchanan, 2001; Cross, 2011). It is also stated as a willingness to accept the notion of creativity and obscurity in thinking. Likewise, it is a systematic way of thinking (Cross, 2001; Lawson, 2005; Rowe, 1991). Design thinking does not follow a traditional linear pattern as a processing model but is formed in iterative cycles (Cross, 2004; Lawson, 2006). Buchanan (2001) specifies design-thinking as a human's generating ideas, processes or systems based on the needs by making use of his skills of planning, problem-solving and creativity. Collins, Joseph and Bielaczyc (2004) put forward that design comprises aims, actions and purposes to counter real-life challenges and solve them. Besides, design is defined as a concept involving scientific and creative activities, coming up with solutions to open-ended problems, and a bridge between theory and practice (Hoadley & Cox, 2009). Lockwood (2009) sees design thinking as a practice of the designers' using their sensibility and problematic methods. According to Liedtka (2015), design thinking is a process requiring iterative redesigning. Simon (1996) defines design thinking as transforming existing conditions into preferred ones. Pink stipulates that design thinking is a mental framework required for problem-solving. Martin (2009) defines design thinking both as analytical and intuitional thinking. Design thinking is also addressed as solving problems requiring a systematic process to achieve the expected outcomes (Brown, 2009; Rodgers & Winton, 2010). Design thinking promotes generating various ideas needed for innovation. Within this framework, design thinking is a creative problem-solving method (Vande Zande, 2007).

According to Tim Brown, one of the leading advocates of design thinking, design thinking;

- seeks innovative solutions to complex problems,
- is an innovative approach in tackling the unknown,

- is a fast and iterative prototyping method in understanding the user's needs, discovering the solutions and ideas,
- is a human-centered methodology (Brown, 2008).

2.2. Design Thinking as a Process

The design thinking method improves the world around us every day due to its ability to deliver breakthrough and innovative groundbreaking solutions. It is more than a process; it opens up a whole new way of thinking and decision-making actions and offers tools to help you implement this new mindset. In this context, it is very important to examine the stages of the design thinking process.

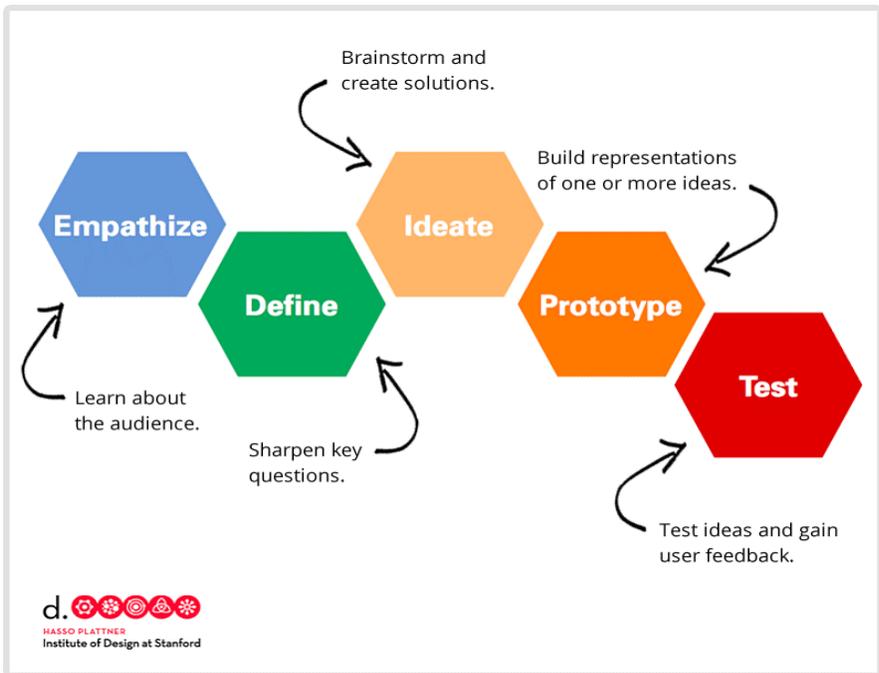


Figure 1: Design Thinking Process (D.School, 2015)

As seen in Figure 1, institutions such as Stanford Design School or reputable design companies such as IDEO regard design-processing stages as interdependent (Lugmayr, Stockleben, Zou, Anzenhofer & Jalonen, 2014). Design thinking develops a new insight with these stages (Pendleton- Jullian & Brown, 2018). Design thinking dynamic and non-linear framework is divided into five stages: (1) Empathize (2) Define, (3) Ideate, (4) Prototype and (5) Test (Scheer, Grote, Chang, Schomburg, Munaretto, Rother & Schomburg, 2011). These stages are

linear but enable iterative recycling through feedback (Kröper, M., Fay, D., Lindberg, T., & Meinel, 2011). Brown (2008) explains the components of the design thinking process in Table 1.

Table 1: Stages of Design Thinking Process (Brown, 2008)

Components	Explanation
Empathize	It is the stage of understanding the profile of the users the product is designed for. This stage involves observation in relevant contexts and contacting them through negotiations.
Define	At this stage, it is important to define the challenge, clarify the condition and focus on the design. This stage comprises the designers' tackling the issue to be resolved and articulating it and selecting one or more 'requirements or the users.
Ideate	This stage includes a physical activity of the designer group such as brainstorming, sketching and developing new ideas.
Prototype	It is the stage in which designers respond to the questions and get feedback from the users to approximate them to the final solution and produce works. This stage involves constructing something that will respond to some questions when tested.
Test	Users give feedback about the prototypes. This stage involves the testers experimenting with the product without the designers' explanations (namely, testers interpret the prototype for themselves) and observe their behaviors and listen to what they express and ask about the prototype.

Table 1 states that the design thinking process consists of interdependent stages. It is stated in the literature that the stages of the process, despite changing based on its source, must be extensively iterative, seek the best possible solution and in a cycle (Brown, 2009; Carroll, Goldman, Britos, Koh, Royalty & Hornstein 2010; IDEO, 2014). While each of the stages is sequential and in a regular cycle in design thinking, Meinel and Leifer (2011) stipulate that real stages designers follow are not sequential in most research and various stages there is a flow and irregular movement among between different stages.

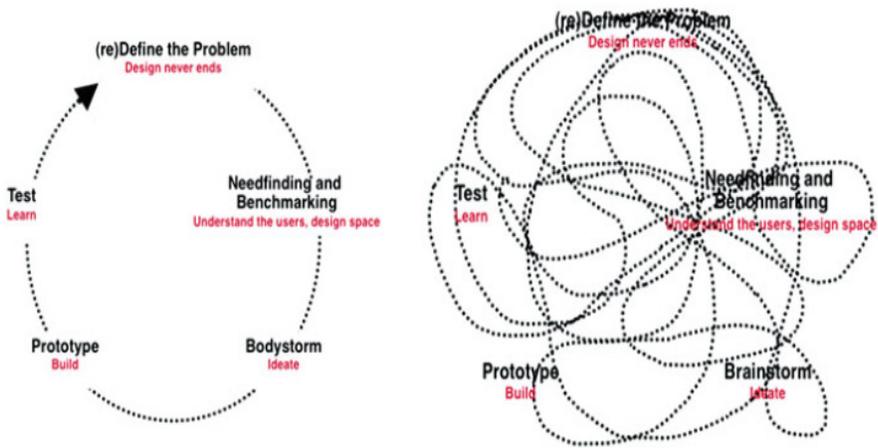


Figure 2: The presumptive way of (on the left) design thinking, A realistic way of design thinking (on the right) (Source: Meinel & Leifer, 2011)

In Figure 2, it is revealed that the real stages followed by the designers are not at all regular and in many cases they move smoothly and irregularly between different stages. Meinel and Liefer (2011) who defend the idea that design thinking could be adopted as an approach or a way of perception express the paradigm of design thinking as making innovations to transform ideas into realities and solving real-life problems by transforming. Design thinking is a human-centered methodology that understands the user's needs, discovers the solutions and ideas, iteratively and quickly prototypes them (Carroll, et al, 2010). According to Radcliffe (2009), the design thinking process is dealt with in two parts. One of them is the idea part that displays the problem by understanding, observation and developing a viewpoint; the second one is the solution part involving the prototype and testing. From a cognitive standpoint, design thinking involves backward and forward movements among different options in a convergent process in which different and various alternatives are generated (Brown, 2008).

Brown classifies this process into three stages. The first stage 'inspiration' is the stage where a problem or the user's needs are defined and understood. In the second, 'idea' stage, several ideas are developed to come up with probable solutions to problems. In the third stage, 'practice' is made to implement the developed idea. Brown (2008), developed design thinking and generated products, processes and strategies by handling it as empathizing, integrative

thinking, optimism and cooperation. In this context, Brown (2008) emphasizes that design thinking finds solutions to humans' needs through the designer's sensibility and matching methods. Martin (2009) pondered on the usages of design thinking. He focused on creative thinking and case studies. Meinel & Leifer (2011) pinpointed that design thinking contributes to problem-solving. They expressed that design thinking is a human-centered process, combines a range of professions ranging from design, social sciences to engineering. This process also generates user-focused, multi-disciplinary products and systems. Meinel & Leifer (2011) also believe that the design process is a discovery period and it is important in thinking and practicing.

2.3. The Features of Design Thinking

Design thinking is a human-centered design and provides integrative thinking, design management, and using design as a strategy (Echeverría, García-Campo, Nussbaum, Gil, Villalta, Améstica & Echeverría, 2009). The main features of design thinking are that it is human-centered, open to cooperation, optimistic and experimental. The features are expressed by Brown (2008) as follows:

1. It is human-centered: Design thinking starts with deep empathy. This is essential to understand the needs. Putting yourself into someone else's shoes increases the motivation of students, teachers, parents, employers and managers.
2. It is based on cooperation: It is a structure that deals with solving the problems of not only a single individual but more than one person. Thus, its main advantage is supporting others' creativity through multidimensional viewpoints.
3. It is optimistic: The main belief behind design thinking is that all of us can create changes. No matter what the extent of the problem is, no matter how much time it requires or regardless of the scarcity of our budget, it does not matter. Namely, whatever the limitations are designed to process could be entertaining.
4. It is experimental: Design thinking allows the individual to be unsuccessful and make mistakes. It is important to learn a lesson from the mistakes. It involves generating new ideas, giving feedback, testing and retesting. When the needs of the individuals are taken into consideration, it is meaningful for the students to progress even though they believe the issue is resolved. This is because there is also an expectation for perfectionism. Although

expectations complicate risk-taking, trying out the options together and experimenting enable learning by doing in design thinking (Brown, 2008).

When the definitions, features, components and stages of design thinking are reviewed in the literature, design thinking and the skills it promotes are regarded as a way to improve the methods of students in the 21st century (Heskett, 2003; Koh, Chai, Benjamin & Hong, 2015). Design thinking is defined as an important structure to struggle with the ever-growing challenges of a globalized community in the future (Howard, 2008; Koh, 2015; Noweski, Scheer, Büttner, von Thienen, Erdmann & Meinel, 2012; Trilling & Fadel, 2009; Wright & Wrigley, 2019; Wright & Davis, 2014; Trilling & Fadel, 2009; Yelland, Cope & Kalantzis, 2008). In this context, design thinking is an effective means to develop new ideas and find innovative solutions to complex problems. Design thinking bears the potential to change the students' viewpoints in terms of empathizing with a desire for a good design (Brown, 2009; IDEO, 2014; Plattner, Meinel, & Leifer, 2012; Plattner 2013).

Likewise, design thinking promotes metacognitive awareness when the students realize that their prejudice has an impact on the design or what they have learned. (Carroll et al, 2010; Goldman, Carroll, Kabayadondo, Cavagnaro, Royalty, Roth & Kim, 2012; Puntambekar & Kolodner, 2005). The literature review expounds that design thinking contributes to students in terms of various aspects such as ensuring confidence, empathizing, determining prejudices concerning the action, encouraging thinking, raising metacognitive awareness, problem solving and using imagination. Likewise, it teaches students how to study in groups (Goldman et al., 2012; Koh, 2015). Owen (2007) defines reflective judgment as an appropriate framework to comprehend the cognitive development in design thinking. When individuals grow, thanks to their epistemological assumptions, evaluation skills and beliefs the way they make predictions and inference about knowledge also change (Dorst, 2006; Howard, 2012). Therefore, in practice the value of design thinking, as stated by Yılmaz and Daly (2016), is a facilitating factor in teaching. In essence, design thinking is a sound model in learning.

3. Design Thinking and Its Reflections on Education

Design thinking has become more prevalent in educational practices nowadays. In literature, design thinking is discussed both as an approach and a learning

tool. Design thinking as an approach provides a method to perceive, interpret and find a way in the world around us. As a learning tool, design thinking allows for implementing a series of principles required in cases of complex situations.

Although there are some disagreements about design thinking, most practitioners and academicians accept its effectiveness in solving ‘wicked problems. The term wicked problem is defined by Buchanan (2001) as ‘ill-defined problems with various alternatives for solution’. Johansson-Sköldberg, Woodilla, and Çetinkaya (2013) handle the wicked problem by emphasizing the necessity of creativity to find solutions. Martin (2009) sees wicked problems as mysteries to be solved through inductive logic. In this context, design thinking is to put forth creative actions by encouraging problem solving.

Design thinking focuses on the solution of practical, creative problems. Razzouk and Shute (2012) define design thinking as an analytical and creative process that allows for an individual’s trial, modeling, designing a prototype, receiving feedback and redesigning. With design thinking solution-oriented options are researched and imagination and intuition are used to achieve expected results. Therefore, design thinking comprises individual features such as personality, patience and creativity (Razzouk & Shute, 2012). From a different perspective, Rath, Breisch, Sodan and Spieler (2010) define design thinking as a learning model fostering process-based and project-based learning by emphasizing creativity, creative confidence and competence.

Design thinking is inextricably linked with Maker Movement (Hlubinka, Dougherty, Thomas, Chang, Hofer, Alexander & McGuire, 2013; Oliver, 2016; Vossoughi & Bevan, 2014). As suggested by Next Generation Science Standards (NGSS), design thinking is expressed as a means for educators to prepare the students for 21st-century skills (Crismond, Gellert, Cain & Wright, 2013). Indeed, design thinking is stated as more appropriate to the current educational tendencies (Kafai & Resnick, 2012; Koh, 2015). There is growing evidence that design thinking is a sound and meaningful means to transform into effective learning at schools, to support the variety in students’ learning styles, and to develop skills to tackle real-life problems (Davis, Hawley, McMullan & Spilka, 1997; Teixeira, 2010). Through design thinking, it is possible for students to participate in the labor force in new educational systems and to adapt to the principle of life-long learning by enhancing knowledge transfer (Herrington, Herrington, Kervin & Ferry, 2006; Razzouk & Shute, 2012).

Design thinking enables the students to work collaboratively, think with different methods and take risks. It offers quite a creative experience in the development of a subject field. It develops the empathizing skills of the students, their collaboration and forming a prototype with an in-depth understanding through meaningful and practical projects. It improves both inductive and deductive logic of the students by developing concepts through intuitional knowledge and brainstorming. Students also develop collaboration, take risks and in turn generate a product together (Van Es & Sherin, 2002). Design thinking includes thorough cognitive processes that trigger the development of critical thinking skills. Design thinking helps students think like designers, and generally makes them prepared for complex real-life problems (Razzouk & Shute, 2012). Goldman (2012) defends the idea that design thinking could be developed in individuals and that it should be implemented via design skills being a design thinker.

In order to learn and teach, it is necessary to actualize a learning model equipped with 21st-century skills-based on cooperation. With this in mind, researchers and educators started to adopt design thinking as a means to teach them thinking skills required for them in life (Carroll et al., 2010; Goldman et al., 2012).

Due to the change in our recent world conditions, requirements and needs changed and this necessitates individuals to work in a group harmoniously, be creative and productive. It was stated in the 2023 Education Vision document published on 23rd October 2018 that ‘Design-Skill Labs’ enhancing intellectual, emotional and physical needs of the students be established and that national standards be formed (MEB, 2018). Ranging from primary education to the end of high school, students will transform what they have learned at ‘Design-Skill Labs’ to real-life skills and they will become skillful in practice in parallel with their talents. These labs will be environments that are designed with a common aim, and designs will be made, and products will be generated in these environments. In this context, it is important to deal with design thinking within the education system and it should be scrutinized in terms of educational purposes.

3.1. Learning through Design & Design Thinking Practices at Schools

The idea of design thinking in education focuses on how the students learn the knowledge through the active design process or how they make meanings

(Kolodner, Crismond, Gray, Holbrook & Puntambekar, 1998). Design thinking in education is defined as combining one's active problem-solving skills and effective change maker skills and forming a new tendency for learning (Kelly, 2016).

Design is an action for creating a plan, process or system. Teaching is setting goals or achieving goals for specific users (Ralph & Wand, 2009). Teaching involves the design of sound experimental systems for student's learning, development, and problem-solving (Bereiter & Scardamalia, 2006). In this context, the teaching and design process is the action for iterative problem solving, thinking and doing (Nelson & Stolterman, 2012). In learning through design thinking, how students experience design processes, how they can be involved in learning and experience, how they can put into practice the concepts individually in a meaningful way (Papert & Harel, 1991).

Next Generation Science Standards, based on the theory that the future will be complex and it will require struggling with some currently unknown problems, clearly encourage the use of design thinking strategies as a means for the students to come up with solutions to complex problems (Bybee, 2014). Learning through design aims to develop the student's knowledge, skills and creativity through more active collaborative environments (Kafai & Resnick, 2012; Kalantzis & Cope, 2005).

In her ethnographic study with middle school students, Carroll (2011) determined that design thinking promotes creativity and innovation and fostered cooperative features such as listening to their peers, risk taking and sharing their ideas.

The advocates of design thinking in education believe that it fosters educators, innovation, problem-solving, creativity and cooperation (Anderson & Shattuck, 2012; Rauth, Köppen, Jobst & Meinel, 2010; Watson, 2015). For Anderson and Shattuck (2012) design thinking skills are important for their future. It helps develop the students' cognitive and social skills (Todd & Magleby, 2004). Furthermore, Bruton (2010), Noweski et al. (2012), stipulate that design thinking as a constructivist learning method provides discovery and problem-solving, being open-minded, innovative and creative and motivating for the students. Scheer, Noweski and Meinel (2012) state that design thinking is effective in encouraging 21st century skills through its applications in interdisciplinary projects. For design thinking to be applicable in educational environments, the scientific method must be the primary means. However, design

thinking must not compete with the scientific method but be complementary to it. Therefore, design thinking as an integrative concept is a structure that enables the participants to solve challenging real-life problems creatively and facilitates working in collaboration in multidisciplinary teams.

3.2. Design Thinking and Teacher Education

Few research studies analyze design thinking for teachers or prospective teachers. Some studies indirectly focus on how design thinking could function in teacher education. Norton and Hathaway (2015) provided a framework for teacher education based on design thinking. In this study, it is stated that teachers become active and creative experiment designers because they are forced to create new practices following the 21st century skills. In literature, there is an emphasis on the importance of teachers' being designers unlike the traditional practices (Kirschner, 2015). McKenney, Kali, Markauskaite and Voogt (2015) put forward that in the 21st-century teaching and education, an expert teacher is both a practitioner and a designer. In brief, design thinking in teaching can be defined as cognitive processes facilitating the generation of creative solutions in educational environments (Koh, 2015).

The designing effort of teachers is distinguished from the endeavors of teachers in traditional education that either implement or practice something that already exists. Instead, the teacher is the one to actively construct, invent, develop and design the practice (Carlgren, 1999; Skott, 2015).

In this context, it is very important that Brown's (2008) design thinking model starts with the empathy phase and approaches teachers with the assumption that they generally understand a phenomenon based on their personal experiences. It is a critical matter to have a model that evaluates other shareholders' viewpoints as 'empathetic' in a process based on someone else's experiences. For teachers, designing is creating new experiences for a sound learning environment. This involves forming and integrating processes that facilitate conceptually sound, personally motivating and culturally relevant experiences for students (Kali, McKenney & Sagy, 2015).

Teachers make decisions by responding to unexpected needs and opportunities and adapt to situations and thus make designs (Davis, Beyer, Forbes & Stevens, 2011; Svihla, Reeve, Sagy & Kali, 2015; Parsons & Vaughn, 2013). Aiding teachers to develop design thinking provides productive environments for learning and a framework for planning rather than mere planning of the educational practices (Seiler, Tobin & Sokolic, 2001; Svihla et al., 2015).

3.1. *Teachers as Designers*

Some research studies put forward those teachers are also designers by emphasizing the importance of design in teaching (Carlgren, 1999; Norton & Hathaway, 2015). What the design approach means or how it will be applied in teacher education is not concrete enough (Lahey, 2017). Despite growing interest in learning and teaching design thinking, there is a need to clarify what it means in practice and how it will be applicable in teacher education.

Based on the theoretical foundation of teaching design, ‘Anybody can design.’, academicians have mentioned that design is a theoretical lens in learning and teaching (Kirschner, 2015; Razzouk & Shute, 2012). Kimbell and Julier (2012) described the applicability of design thinking in various professions and stated that many people join in a design endeavor every day and, in any context, people become designers by coming up with solutions. The study of Schön (1991), stipulates that design is a part of human-centered professions that require implicit practical epistemology in artistic, intuitional processes of designers. Doctors, nurses, engineers and particularly educators are at the core of human-centered jobs, and they use design thinking against problems. Teachers are the primary designers as they design the educational experiences of their students (Kirschner, 2015). In this context, students need to select and prepare relevant tools for their learners, set goals and help the learners reframe the problems creatively for them. For the teachers, design is an experience for sound learning (Kali, McKenney & Sagy, 2015; Löwgren & Stolterman, 2004; Plattner, 2010).

Teachers encounter various types and numbers of complex problems during teaching practices. Such practical issues are challenging and there is no single solution for them (Bullough, 2012). Design thinking enables teachers to respond to unexpected needs in the teaching process and leads them to make designs (Buchanan, 2001; Norton & Hathaway, 2015; Svihla et al., 2015; Vaughn & Parsons, 2013).

In this context, with design thinking teachers can understand the challenges by thinking like a designer and they can determine how to proceed during the teaching process. Thanks to design thinking approach, teachers can perceive themselves as a designer and figure out solutions to problems during the teaching process.

3.2. *Design Thinking in Teacher Education*

Recently, interest in teaching as the design has led to hot debates about design endeavors in teacher education (Kirschner, 2015). Design thinking is an

inseparable part of practicum for prospective teachers. The iterative cycles of design approaches fostering problem solving may lead prospective teachers to their sustainable professional development in the long run (Hagger, Burn, Mutton & Brindley, 2008). Besides, the tendency for design may potentially facilitate the success level of prospective teachers in pre-service education in a more integrated way (Burn, Hagger, Mutton & Everton, 2003). This is because design thinking eases how the prospective teachers express their decisions and underlying reasons for the precautions they take, the factors they take into consideration when planning teaching and their judgments concerning the results of learning designs.

Blending teacher education with design-based pedagogies is essential in tackling complex and unanticipated problems (Schön, 1991). Norton and Hataway (2015) promote design-based programs as a model in teacher education. Engaging prospective teachers to design thinking studies is crucial for them to widen their perspective in imagining how education should be. Teacher candidates gain practice thanks to design thinking and gain design knowledge (Kolodner, Zahm & Demery, 2015; Shaffer, 2005). Learning the notion of design thinking in pre-service enables teacher candidates to transform their thinking skills into practice while producing knowledge (Hagger et al., 2008). Koh (2015) dwells on the mismatch between theory and practice particularly in teacher education and emphasizes the conceptual importance of design thinking.

How the design thinking concept will be developed for teacher candidates remains a pedagogical problem. Particularly, there are few research studies towards understanding how their pedagogical awareness could be raised and their capacity in terms of design thinking could be increased. The studies are generally about professional development publications as practical tips for educators (Brahms & Wardrip, 2014; IDEO, 2014). In this context, conceptualizing design thinking will make it more applicable for teacher education designers and analysts in terms of understanding the nature of design thinking.

4. Conclusion

In this particular study, in which the implications of design thinking on education and a compilation of teacher education were made, the mindset of design thinking, its stages and process were scrutinized. In line with the aims of this conceptual article, the theoretical foundations of design thinking in teacher education, its implications on teacher education, critical challenges and importance were

examined. Design thinking is believed to be a means of learning in education due to its fundamental features. In this particular research, findings of studies in literature in that design thinking is a sound and meaningful means to transform learning at schools, support the variety in students' learning styles and cope with the real-life challenges were presented. Design thinking can be regarded as a method to guide decision-making processes in teacher education and as a professional learning process. Both in pre-service and in-service activities, it is believed that teacher identity as a designer contributes to professional development. In this context, design thinking is an asset in conceptualizing teaching and designing practices relevant to 21st-century requirements. Realizing the attributed roles of teachers in professional competencies is much more important than exhibiting them within the scope of 21st-century fundamental skills. In the developing, changing social, technological and economic settings, the design thinking approach which is a recent approach to an existing problem seems to remain as one of the hot agenda items in the contemporary world and develop in the future.

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CHAPTER 13

ONLINE LEARNING READINESS OF FINE ARTS STUDENTS¹

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1. Introduction

The distance learning model, which provides learning opportunities other than the traditional classroom model, has started to be used under the headings of online and electronic learning with the developments in information and communication technologies. Today, especially with the emergence of the global pandemic, online learning has become the guarantee of the sustainability of education life. In fine arts education, where performing lessons and face-to-face learning are used intensively along with theory, online learning has begun to be used at all levels of education.

Fine arts education is one of the main elements of general education. Uysal (2005) stated that fine arts education encompasses all fields of art, and its purpose is to teach people to make aesthetic judgments by contributing to cognitive, affective, and psychomotor development. Rauscher et al. (1997) found that fine arts education makes significant contributions to spatial-temporal skills used especially in mathematics and science courses. Carioti et al. (2019) measured that those with fine arts education performed better in general cognitive abilities, visuospatial skills, and reading-memory tests.

Information and communication technologies are important elements that shape the art and art education of the period we live in (Ünalın, 2016). The use of online learning tools in fine arts education has positive results in many topics such as interest in the lesson (Tekin Karagöz & Karagöz, 2017), motivation (Di Serio, Ibáñez, & Kloos, 2013), and success (Kang & Ritzhaupt, 2021). On

¹ This study was presented as an oral presentation at the International Halich Congress on Multidisciplinary Scientific Research, Istanbul, August 2021.

the other hand, researches using online learning are generally carried out to support formal learning, not as an alternative to formal learning. With the covid-19 pandemic, all education programs have passed from formal education to distance education model quickly and without specifying the duration.

Acquiring the necessary prerequisite behaviors for a person to perform a learning activity is called readiness (Ülgen, 1997). According to Bloom (1995), readiness is an important input of the teaching-learning system. The realization of learning depends on the readiness level of the student (Harman & Çelikler, 2012). Students with high readiness will have a better learning experience. At this point, it can be said that it is important to start a new learning process by measuring the readiness levels of learners.

Determination of readiness: It helps to guide in accordance with the individual and characteristic features of the students, to determine their needs, and to make plans, programs, and preparations for these needs. (Harman & Çelikler, 2012). In this context, the subject of this study is to examine the online learning readiness of the fine arts education department students, who have started to conduct their education entirely with online learning.

1.1. Purpose

This study, it was tried to examine the online learning readiness of undergraduate students of fine arts education. Depending on the purpose of the research, answers to the following questions were sought:

- What is the online learning readiness of fine arts education students?
- Fine arts education students' readiness for online learning: do they differ according to their departments, genders, and grade?

1.2. Significance

The pandemic process has shown that online learning is an important part of education life. Although it has some criticisms and limitations, online learning offers the opportunity to learn under difficult conditions. Even areas that are more prone to face-to-face education, such as fine arts, need an online learning model. This study is important in terms of showing how ready the fine arts students, who quickly switch to the online learning model, are to this model.

2. Method

2.1. Research Model

Survey model was used in the conduct of this research. The survey model is “the research conducted on relatively larger samples compared to other studies, in which the opinions of the participants about a subject or event or their characteristics such as interests, skills, abilities, and attitudes are determined” (Büyüköztürk, Çakmak, Akgün, Karadeniz & Demirel 2016, p. 177).

2.2. Participants

The study group of this research consists of undergraduate students who continue their education at Gazi University Fine Arts Education Department in the 2019-2020 academic year. The accessibility factor was taken into account for the selection of the study group. It was aimed to reach all registered students (YÖK, 2020). Information on the number of students that can be reached according to the targeted study group is given in Table 1.

Table 1. Number of Students Reached

	Division	Registered	Reached	%
Gazi University	Music Education	232	101	43.5
	Art Education	235	77	32.7
	Total	467	178	38.1

As seen in Table 1, 38.1% of the students enrolled in fine arts education departments were reached in the 2019-2020 academic year. The characteristics of the study group are given in Table 2.

Table 2. Study Group

	Group	Music	Art	f	%
Gender	Female	66	46	112	62.9
	Male	35	31	66	37.1
Grade	1	31	39	70	39.4
	2	30	21	51	28.7
	3	24	10	34	19.1
	4	16	7	23	12.9
Total				178	100

In Table 2, information about 178 fine arts students who could be reached and who gave a positive answer and participated in the study and formed the study group are given. The highest level of participation was observed among female students and first year students.

2.3. Data Collection

“Online Learning Readiness Scale” translated into Turkish by Yurdugül and Alsancak Sırakaya (2013) was used to solve the sub-problems determined in the research. The data collection process took place in March 2020. The applied scale consists of 5 factors and 18 items. The grading used in the scale was formed as “Strongly Disagree = 1”, “Disagree = 2”, “Undecided = 3”, “Agree = 4”, “Strongly Agree = 5”. The scale was transferred to Google forms and delivered to the study group online. The results of the reliability coefficient calculated for the scale are given in Table 3.

Table 3. Reliability Analysis Results

Factor	Cronbach's Alpha
Computer/internet self-efficacy	.70
Self-directed learning	.81
Learner control	.74
Motivation for learning	.76
Online communication self-efficacy	.65
General	.89

The results of the reliability coefficient calculated are shown in Table 3. Nunnally & Bernstein (1994) stated that the reliability coefficient should be greater than .70. When the results of the analysis are examined, it has been observed that one factor has a value close to .70, while other factors and overall scale have values above .70. Accordingly, it can be said that the scale is reliable.

2.4. Analysis of Data

Statistical analyzes used in the research were made with SPSS (Statistical Package for the Social Sciences) 21 package program. The results of the normality test performed to decide which types of analyzes to be performed are given in Table 4.

Table 4. Normality Test Results

Factor	Kolmogorov-Smirnov	Shapiro-Wilk
1	.000	.000
2	.000	.000
3	.001	.000
4	.000	.001
5	.000	.000
General	.006	.001

In the control, it was determined that normality could not be achieved both in the dimension of the factors and throughout the scale. For this reason, Mann Whitney U test was applied for department and gender variables and Kruskal Wallis test was applied for grade variable. The effect sizes of the differences obtained in the analyzes were also calculated. The effect size (r) was calculated by dividing the z value resulting from the test by the square root of the sample number and interpreted according to the criteria of 0.10 low, 0.30 medium, 0.50 high (Field, 2018, p. 403).

3. Findings

The first sub-problem of the research is “What is the online learning readiness of fine arts education students?” formed in the form. The test scores of the data collected from 178 students are shown in Table 5.

Table 5. Test Scores

Factor		S
1	3.93	.75
2	3.75	.78
3	3.68	.79
4	3.57	.68
5	3.70	.68
General	3.72	.62

As seen in Table 5, the arithmetic mean of the online learning readiness scores of fine arts students was calculated as 3.72. The result obtained is at the level of “I agree” in the rating scale. According to this result, it can be said that the students’ readiness level for online learning is at a high.

The second sub-problem of the research is “Fine arts education students’ readiness for online learning: do they differ according to their departments, genders, and grade?” formed in the form.

Table 6. Mann-Whitney U Test Results

Variable	Group	n		S	p
Department	Music	101	3.88	.47	.00
	Art	77	3.51	.73	
Gender	Female	112	3.67	.56	.09
	Male	66	3.80	.71	

Table 6 presents the results of the Mann-Whitney U test conducted to determine whether readiness for online learning varies according to department and gender.

When the department variable is examined; It was determined that the test scores of the music department students ($=3.88$) differed significantly according to the test scores ($=3.51$) of the art-work department students ($p < 0.05$). The calculated effect size ($r = 0.12$) shows that this difference is low. The test results of the music department students differed positively and significantly in all factors.

When the gender variable is examined; It was determined that the test scores of male students ($=3.80$) did not differ significantly compared to the test scores of female students ($=3.67$) ($p > 0.05$). When the factors were examined, a significant difference was found in favor of males only in the learner control factor.

The effect of the grade variable on online learning readiness was examined with the Kruskal Wallis test. (See Table 7)

Table 7. Kruskal Wallis Test Results

	Group	n		Mean Rank	df	X ²	p
Grade	1	74	3.68	88.32	3	.81	.84
	2	61	3.62	85.71			
	3	38	3.81	94.24			
	4	23	3.64	94.50			

When Table 7 is examined, it was determined that the online learning readiness of fine arts students did not differ significantly according to the grade variable ($p > 0.05$). In the analysis made based on factors, no significant difference was observed too.

4. Conclusion and Recommendations

In this paper, the online learning readiness of undergraduate fine arts education students was examined. Due to the Covid-19 pandemic, formal education was

suspended in Turkey, as in many other countries. The continuation of education in fine arts education departments has started to be realized entirely with the online learning model. This study was conducted according to the data collected in March 2020, when students started to use the online learning model officially.

The scale scores obtained showed that the students' online learning readiness was at a high level. According to this result, it can be said that fine arts education students are ready for the education process they will receive with this model.

Music education students ($=3.88$) were found to have higher readiness than art education students ($=3.51$). Music is significantly affected by technological advances. Due to this interaction, a different discipline called music technologies has emerged. Technology is frequently used in music education (Gaines, 2018; Upitis, Abrami, & Boese, 2016; Ruismäki et al., 2013). Music undergraduate students also report positive views on the use of technology in music education (Demirtaş & Eroğlu, 2020). The widespread use of technology in the field of music may be the reason why music education students have higher online learning readiness.

When the gender variable was examined, a difference was found in favor of males only in the learner control dimension. No statistically significant difference was found according to the gender variable in other factors and overall scale. The effect of the gender variable on technology use is gradually decreasing (Rhema & Miliszewska, 2014). Female and male students started the online learning period with similar readiness levels.

In the study, it was concluded that the grade level of the students did not affect the online learning readiness. In recent studies, it has been determined that grade level does not affect online learning (Akcil & Bastas 2021). Today's university students, called digital natives (Prensky, 2001), interact with technological devices since they were born. For this reason, it can be said that it is natural for online learning readiness to be similar.

Suggestions for future research topics:

- The effect of full-time online learning experience on the achievement and motivation of fine arts students.
- Evaluation of the process by students and teachers.
- More efficient use of online learning in arts education.

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CHAPTER 14

THE EFFECT OF THE COVID-19 PROCESS ON THE ATTITUDES OF MUSIC STUDENTS TOWARDS E-LEARNING¹

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1. Introduction

Universities in Turkey have been carrying out their education activities with e-learning for more than a year. Immediately after the Covid-19 outbreak was declared as a pandemic, face-to-face learning was terminated without adequate preparation time.

The distance education model has been used for over a hundred years (Gürpınar & Zayim, 2008). The electronic learning (e-learning) model, which emerged with the combination of distance education and information-communication technologies, has been used in educational environments for a long time (Harandi, 2015). As in many fields, research on technology support and e-learning in music education has been carried out for a long time. The use of technology has yielded successful results in the development of musical skills and theory studies (Buonviri & Paney, 2020; Chen, 2015; Chong, 2019; de Villiers, 2018). Adileh (2012), concluded that the mixed-use of face-to-face and e-learning models is more effective than face-to-face education alone. Okan (2017) also came to that there is no difference between face-to-face and e-learning in musical instrument education. These studies were generally conducted with a limited time frame and limited learning objectives.

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Many programs at the university level have been operating with a full-time e-learning model for a long time. In Turkey, on the other hand, there is no program in which the full-time e-learning model is used in the field of music. E-learning tools are generally used to meet individual learning needs or to support formal education. With the Covid-19 pandemic, the e-learning model has been used in all levels and fields.

With the pandemic all over the world, the e-learning model has become the most important tool for the execution of educational activities. For this reason, many pieces of research on e-learning have been started (Bestiantono, Agustina, & Cheng, 2020; Nikou & Maslov, 2021; Unger & Meiran, 2020; Toquero, 2020). Similarly, studies are examining the application of music education during the pandemic process.

Ozer and Ustun (2020) examined the views of 24 undergraduate music students about distance learning. Interviews were conducted with 24 music students using a semi-structured interview form as well as the interview data were analyzed by content analysis technique. As a result of the research, it was concluded that the e-learning model is not as efficient as face-to-face education and that the students have technical difficulties.

Calderón-Garrido and Gustems-Carnicer (2021) examined how music teachers adapted to the pandemic process. The data were obtained by applying a questionnaire to 335 music teachers. As a result of the research, it was determined that the teachers had methodological and financial resource deficiencies. In addition, in the study, it was determined that there were differences in practice between schools.

Attitude is called an individual's reaction to any object, event, or situation based on their experience (İnceoğlu, 2010). Although e-learning has been used for a long time, such widespread use has never been experienced before. Therefore, an opportunity has arisen to examine attitudes towards full-time e-learning. At various stages of the Covid process, for example, English students (Risten & Pustika, 2021), nursing students (Thapa, Bhandari, & Pathak, 2021), music students (Demirtaş, 2021), have positive attitudes towards e-learning. Ismaili (2021) stated that although e-learning needs to be developed, university students have a positive attitude. In this context, the subject of the research has been determined as the examination of the attitudes of the music department students who have been conducting their education entirely with e-learning for a year.

1.1. Purpose

In this paper, the effect of the covid process on the attitudes of undergraduate music students towards e-learning was tried to be examined. Depending on the purpose of the research, answers to the following questions were sought:

- What are the attitudes of music students towards e-learning at the end of the Covid process?
- Have music students' attitudes towards e-learning changed according to the beginning of the covid process?

1.2. Significance

This study was carried out with undergraduate students who have been continuing their music education with the e-learning model for one year. The data collected from the study were compared with the situation at the beginning of the pandemic. For this reason, research is important in terms of showing how the attitudes of music students who have been using the e-learning model for a long time have changed.

2. Method

2.1. Research Model

A survey model was used in the conduct of this research. Büyüköztürk, Çakmak, Akgün, Karadeniz ve Demirel (2016) defines the survey model as follows: “research conducted on larger samples, generally compared to other studies, in which the views of participants on a subject or event or their interests, skills, abilities, attitudes, etc. are determined” (s. 177).

2.2. Study Group

The study group of this research consists of undergraduate students of Gazi University Music Education Department, Ankara Hacı Bayram Veli University Turkish Music State Conservatory, and Hacettepe University State Conservatory in the 2020-2021 academic year. It was aimed to reach all enrolled students (YÖK, 2020). Information on the number of students that can be reached is given in Table 1.

Table 1. Number of Students Reached

University	Department	Enrolled	Reached	%
Gazi	Music Education	232	79	34.0
Ankara Hacı Bayram Veli	Turkish Music Conservatory	149	59	39.5
Hacettepe	Music Conservatory	189	73	38.6
Total		570	211	37.0

As seen in Table 1, 37% of the students enrolled in the music departments of the selected universities in the 2020-2021 academic year have been reached.

Table 2. Demographic Variables

	Group	f	%
University	Gazi	79	37.4
	Ankara Hacı Bayram Veli	59	28.0
	Hacettepe	73	34.6
Gender	Female	121	57.3
	Male	90	42.7
Grade	1	80	37.9
	2	71	33.6
	3	39	18.5
	4	21	10.0
Musical Instrument Type	Turkish Music	78	37.0
	Western Music	133	63.0
Total		211	100

In Table 2, information about 211 music students who responded positively and participated in the study is given. The highest participation was observed in the music education department, and the lowest participation was observed in the Turkish music state conservatory.

2.3. Data Collection

The Attitude Scale Towards E-Learning developed by Haznedar and Baran (2012) was used as a data collection tool in the research. The data collection process was carried out in April 2021. The scale applied after obtaining the

necessary permissions consists of 2 factors and 20 items. The reliability coefficient of the scale was calculated as .95. The grading used in the scale was formed as “Strongly Disagree = 1”, “Disagree = 2”, “Undecided = 3”, “Agree = 4”, “Strongly Agree = 5”. The scale was transferred to Google forms and delivered to the study group online.

2.4. Analysis of the Data

Statistical analysis used in the research was made with the SPSS (Statistical Package for the Social Sciences) 21 program. A normality test was performed to decide which types of analysis should be performed. In the control, it was determined that the normal distribution could not be achieved throughout the scale. For this reason, the Mann-Whitney U test was applied for gender and musical instrument type variables, and the Kruskal Wallis test was applied for grade and university variables. The Mann-Whitney U test was used to calculate the effect size of the difference obtained from the Kruskal Wallis test (George & Mallery, 2019). The calculated effect size was interpreted according to the criteria of 0.10 low, 0.30 medium, 0.50 high (Field, 2018). The arithmetic means obtained from the test were interpreted according to the array width of 0.80. To examine the effect of the pandemic process on attitude scores, the data collected in March 2020 (Demirtaş, 2021) and the data collected in this study were compared with the Mann-Whitney U test.

3. Findings

The first sub-problem of the research is as follows: What are the attitudes of music students towards e-learning at the end of the Covid process? The test scores of the data collected from 211 students are shown in Table 3.

Table 3. Test Results

	n	\bar{x}
Gazi University	79	3.19
Ankara Hacı Bayram Veli University	59	2.81
Hacettepe University	73	2.82
Total	211	2.96

The arithmetic mean of music students' attitude scores towards e-learning was calculated as 2.96. The result obtained is in the range of “undecided” on

the rating scale. According to this result, it can be said that students' attitudes towards e-learning are at a moderate level.

When looking at universities, the attitude scores of Gazi University Music Education Department students were measured as "agree", that is, a good level. The student scores of the other two universities are moderate.

In Table 4, the Mann-Whitney U test results are given to determine whether music students' attitudes towards e-learning change according to their gender and musical instrument types.

Table 4. Mann-Whitney U Test Results

Variable	Group	n	\bar{x}	p
Gender	Female	121	2.91	.30
	Male	90	3.02	
Musical Instrument Type	Turkish Music	60	2.86	.11
	Western Music	136	3.01	

As seen in Table 4, no statistically significant difference was found in the variables of gender and musical instrument type ($p > 0.05$). It can be said that the variables of gender and musical instrument type do not affect attitudes towards e-learning.

The Kruskal Wallis test results, which were conducted to determine whether music students' attitudes towards e-learning change according to their grades and universities, are given in Table 5 and Table 6.

Table 5. Grade Valuable

	Group	n	\bar{x}	Mean Rank	df	X ²	p
Grade	1	80	2.64	80.74	3	33,4	.00
	2	71	2.95	104.91			
	3	39	3.37	140.12			
	4	21	3.40	142.55			

As seen in Table 5, music students' attitudes towards e-learning differ statistically according to their grade levels ($p < 0.05$). The attitude scores of 3-4th grade students differ significantly and positively according to the 1-2nd grade students' attitude scores.

Table 6. University Valuable

	Group	n	\bar{x}	Mean Rank	df	X ²	p
University	Gazi	79	3.19	127.25	3	15,3	,00
	Hacı Bayram Veli	59	2.81	92.66			
	Hacettepe	73	2.82	93.78			

When Table 6 is examined, it is seen that the attitudes of music students towards e-learning differ statistically according to their universities ($p < 0.05$). The attitude scores of Gazi University Music Education students differ significantly and positively according to the attitude scores of the conservatory students. The calculated effect size ($r = 0.28$) shows that this difference is moderate.

The first sub-problem of the research is as follows: Have music students' attitudes towards e-learning changed according to the beginning of the covid process?

Attitude scores towards e-learning collected by Demirtaş (2021) in March 2020, the beginning of the distance learning process, were compared with the results of this research. The Mann-Whitney U test result applied for comparison of the results is shown in Table 7.

Table 7. Attitude Scores Comparison

Measurement	n	\bar{x}	Mean Rank	z	p
March 2020	196	3.64	256.1	-8.61	.00
April 2021	211	2.96	155.6		

As seen in Table 7, a statistical difference was found between the two measurements ($p < 0.05$). Accordingly, the attitude scores obtained as a result of one-year use differed significantly and negatively according to the attitude scores collected at the beginning of the covid process. The effect size was measured as 0.42. Music students' attitude scores towards e-learning decreased significantly compared to the beginning of the covid period.

Table 8. Comparison of Variables

	Group	First (\bar{x})	Second (\bar{x})	Difference (%)
Gender	Female	3.57	2.91	-18.5
	Male	3.75	3.02	-19.5
Grade	1	3.61	2.64	-36.75
	2	3.58	2.95	-21.35
	3	3.78	3.37	-12.3
	4	3.64	3.40	-7.05
Musical Instrument	Turkish Music	3.39	2.86	-18.5
Type	Western Music	3.75	3.01	-24.6

In Table 8, comparisons of March 2020 attitude scores and April 2021 attitude scores in terms of variables are given. As can be seen, after one year of e-learning use, attitude scores decreased in all variables. The highest rate of change is in 1st-grade students; The lowest rate of change occurred in 4th-grade students.

4. Conclusion and Recommendations

In this study, the attitude scores of undergraduate music students who have been using the e-learning model for a year were examined. The data obtained in the study were compared with the pre-covid period. In this way, it was tried to determine the tendencies of the students who have been using the e-learning model for a long time due to the covid pandemic.

According to the research data, the attitudes of music students towards e-learning are moderate ($\bar{x}=3,64$). The attitude scores obtained from a similar study group (Demirtaş, 2021) in March 2020 were found to be at a good level ($\bar{x}=2,96$). Attitude scores for the compulsory e-learning model, which started with the Covid process, decreased after one year of use. The measured effect size shows that this difference is high ($r=0.42$).

Serhan (2020) determined that university students' attitudes towards distance learning are low. Malkawi, Bawaneh, and Bawa'aneh (2021) concluded that university students' attitudes towards e-learning are at a positive level. Marpa (2020) similarly found that teachers' attitudes towards technology use during the covid process were positive. The reason for the different levels of attitudes towards e-learning may be because researches is conducted in different fields and at different times. Music education is an area where performance

applications are intense. For this reason, it can be said that music education is not a ready field for using the full-time e-learning model. Octaviani (2021) states that there are difficulties in conducting music education online, in terms of delivering materials, insufficient tools, and lack of users. In this study, attitudes towards e-learning were measured at a moderate level as a result of long-term use.

Although some difficulties have arisen in the use of the e-learning model, educational activities have been able to continue during the covid period with this model. The attitude scores of the students were also measured as moderate at the end of long-term use. Teachers, students, and schools have been operating with the e-learning model for a year without an adequate preparation process. Although there was a decrease compared to the situation at the beginning of the Covid process, it can be considered that the process was successful.

There was no difference between the groups in the variables of gender and musical instrument type. The fact that there is no difference, especially in the field of gender, supports the view that the effect of the gender variable on the use of technology decreases (Rhema & Miliszewska, 2014). It has been measured that the attitudes of those educated in the fields of Turkish music and western music are at a similar level. When the pre-covid period was examined, it was seen that the reason for this situation was the decrease in the attitudes of undergraduate students studying Western music.

When the class variable is examined, it has been determined that the attitude scores of 3-4th grade students close to graduation are higher than the attitude scores of 1-2st grade students. University education is not only a place where lessons are taken but also an area where social and cultural development is provided. Students who have just started their university education have completed an academic year without going to school. The reason why 1-2st grade students' attitude scores towards e-learning are lower may be due to the different expectations from university education. Students' expectations from their university education can be examined in different studies to be conducted qualitatively.

It has been determined that the attitude scores of music education department students towards e-learning are higher than the attitude scores of conservatory students. Conservatory education is an institution where individual performance lessons are given more intensively than music education. The fact that the attitude scores of Turkish music and western music conservatory

students are similar supports this situation. The e-learning model applied in the music education department and conservatories can be examined in detail in different studies. In addition, the expectations of conservatory teachers and students from the e-learning model and the problems experienced during the e-learning process should be investigated in different studies.

Suggestions for future research:

- Examining how the e-learning model is applied in music departments.
- Exploring the expectations of music department students from university education.
- Conducting studies aiming to use the e-learning model more efficiently.

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