ISSN: 1300-915X

IOJPE

INTERNATIONAL ONLINE JOURNAL OF PRIMARY EDUCATION

International Online Journal Of Primary Education

International Online Journal of Primary Education

ISSN: 1300-915X

JUNE 2020

Volume 9 - Issue1

Published in TURKEY
Contact Address:
Prof. Dr. Sinan OLKUN - IOJPE Editor in Chief

Message from the Editor,

I am very pleased to inform you that we have published the first issue in 2020. As an editor of International Online Journal of Primary Education (IOJPE), this issue is the success of our authors, very valuable reviewers who undertook the rigorous peer review of the manuscripts, and those of the editorial board who devoted their valuable time through the review process. In this respect, I would like to thank to all reviewers, researchers and the editorial board members. The articles should be original, unpublished, and not in consideration for publication elsewhere at the time of submission to International Online Journal of Primary Education (IOJPE). For any suggestions and comments on IOJPE, please do not hesitate to send me e-mail.

Prof. Dr. Sinan OLKUN

Editor in Chief

ISSN: 1300-915X

Volume 9, Issue 1 (2020)

Table of Contents

Research Articles

ISSN: 1300-915X

IOJPE

ISSN: 1300 – 915X
www.iojpe.org

International Online Journal of Primary Education *2020, volume 9, issue 1*

INFORMATION AND COMMUNICATION TECHNOLOGIES TEACHERS' PERSPECTIVE REGARDING ONLINE RISK BEHAVIORS IN SCHOOL AGE

Thanos TOULOUPIS
Primary Education Teacher, Ph.D. in School of Psychology, Aristotle University of Thessaloniki, Thessaloniki 54124, Greece
Orcid: https://orcid.org/0000-0003-2951-6919
touloupis@psy.auth.gr

Christina ATHANASIADES
Associate Professor, School of Psychology, Aristotle University of Thessaloniki, Thessaloniki, 54124, Greece
Orcid: https://orcid.org/0000-0003-4916-9328
cathan@psy.auth.gr

Received: 06-01-2020 **Accepted:** 10-05-2020 **Published:** 30-06-2020

Abstract

The present study aimed to investigate primary school ICT teachers' perceptions regarding students' online risk behaviors and their responses to relevant hypothetical scenarios. In addition, it examined the network of relationships among ICT teachers' perceptions and their responses to scenarios to predict their perceived likelihood of intervention. One hundred and thirty-eight (138) ICT teachers (60 men, 78 women), selected randomly from schools all over Greece, participated in the study. The sample completed a set of self-reporting questionnaires online. According to the results, ICT teachers declared that they do not feel confident to manage students' online risk behaviors, regardless of their awareness and sensitization on the issue. The same perspective was also reflected in their responses to the scenarios. Path analyses showed that ICT teachers' perceptions regarding this issue (e.g., high perceived awareness) directly and positively predict their perceived seriousness of the scenarios and their perceived confidence to intervene. However, ICT teachers' likelihood of intervention in the scenarios seemed to be predicted only indirectly (and positively) by their perceptions, through how serious they perceived the scenarios to be and their self-confidence to intervene. The above findings constitute a basis for modifying/designing new training actions for ICT teachers regarding the prevention of children's risk cyber-navigation.

Keywords: Online risk behavior, Primary school students, ICT teachers, Perceptions, Hypothetical scenarios

INTRODUCTION

The United Nations Educational, Scientific and Cultural Organization (UNESCO) has emphasized that the active use of Information and Communication Technologies[1] in every phase of educational activities is acknowledged as both a necessity and an opportunity (UNESCO, 2009). Consequently, the level of ICT equipment in education has continually increased over the last decade. Computer and internet access are the case for nearly all schools, even in primary education, making teaching procedure more interactive and generally offering great academic benefits (Gillen, Arnott, Marsh, Bus, Castro, Dardanou et al., 2019; Lee & Winzenried, 2009; Mandal, 2020; Nikolopoulou & Gialamas, 2016; Urhahne, Schanze, Bell, Mansfield, & Holmes, 2009). One representative example of this effort in the Greek educational system is the number of primary schools with a revised educational program, which refers, among others, the introduction of ICTs -with an emphasis on the Internet- both as a separate course and as a useful tool for other school courses (Ministry of Education, 2010). Essentially, the only difference between these primary schools and other schools in Greece is the systematic investment of Greek educational authorities in the integration of new technologies into the school curriculum for the support of learning, similar to other European countries (Buabeng-Andoh, 2012; DeCoito & Richardson, 2018). However, the level of technology integration in the school curriculum in many countries has remained rather low, with most teachers often relying on reasons of inadequate training and arguing that successful integration of technology into students' school life

[1] From this point on and for the rest of the present article Information and Communication Technologies will be mentioned as ICT.

requires informed technology leaders (Evans-Andris, 1995; Kwok-Wing & Keryn, 2004; Nikolopoulou & Gialamas, 2016).

This situation reflects the necessity for teachers who are responsible for the computer and internet implementation process in secondary schools but mostly in primary schools where the digital literacy of the students begins more formally (Lazonder, Walraven, Gijlers, & Janssen, 2020; Vélez & Zuazua, 2017). These teachers are found in literature mostly as ICT teachers[2] or as ICT coordinators, computer teachers, technology coordinators or computer coordinators. Despite the different terms, these teachers have common duties, including technical support, helping classroom teachers to develop curriculum materials and lesson plans, evaluating ICT programs in schools. Apart from these duties, it is widely accepted, that ICT teachers' most important role in the school community is to promote ethics on the internet and a safe online culture among students (Evans-Andris, 1995; Kwok-Wing & Keryn, 2004), and this is the main argument for choosing primary school ICT teachers as a sample of the present study. However, safe online culture among students should not be taken for granted as recent studies reveal that even primary school students get involved in online risk behaviors, such as unintentional visit to potentially harmful websites, excessive internet use and cyberbullying (Antoniades & Kokkinos, 2013; DePaolis & Williford, 2015; Ki Sook & Kyunghee, 2009; Livingstone Haddon, Görzig, & Ólafsson, 2010, 2011; Machimbarrena & Garaigordobil, 2018; Olenik-Shemesh & Heiman, 2014; Touloupis & Athanasiades, 2014; Twardowska-Staszek, Zych, & Ortega-Ruiz, 2018). These behaviors seriously affect students' well-being and daily school life (Bulu, Kavuk-Kalender, & Keser, 2017; Hinduja & Patchin, 2010; Smith, Sundaram, Spears, Blaya, Schäfer, & Sandhu, 2018).

The findings mentioned above have recently turned researchers' interest towards investigating school personnel's related perceptions, namely their beliefs, understanding, and views (Philippou & Christou, 2001), regarding students' online risk behaviors. This is because, according to the Theory of Planned Behavior (TPB), teachers' perceptions, namely their perceived seriousness of a student's problem behavior (e.g., online risk behavior) and their perceived confidence to intervene, can predict teachers' potential intervention (perceived likelihood of intervention) in the student's behavior and, consequently, their real intervention (Ajzen, 1991; Bauman & Del Rio, 2006; Boulton, Hardcastle, Down, Fowles, & Simmonds 2014; Craig, Henderson, & Murphy, 2000; Dedousis-Wallace, Shute, Varlow, Murrihy, & Kidman 2014; Ellis & Shute, 2007; VanZoeren & Weisz, 2017; Yoon, 2004; Yoon & Kerber, 2003).

Somebody would expect that ICT teachers, due to their responsibility for students' online safety, would play a key role in the studies mentioned above, which could predict ICT teachers' potential involvement in the management of incidents of students' online risk behaviors. Unfortunately, this is not the case. Most studies have investigated secondary school teachers'[3] and principals' perceptions, revealing their medium awareness of and sensitization about the cyberbullying phenomenon. Also, the findings mention that teachers and principals are poorly trained and unable to handle it, being afraid of overstepping the legal boundaries (e.g., Beringer, 2011; Campbell, Whiteford, & Hooijer, 2019; Eden, Heiman, & Olenik-Shemesh, 2013; Graves, 2013; Hunley-Jenkins, 2012; Hyland, 2014; Li, 2008; Kavuk, 2016; Macaulay, Betts, Stiller, & Kellezi, 2018; Moore, 2018; Stauffer, Heath, Coyne, & Ferrin, 2012; Stewart Jr, 2019; Thomas, O'Bannon, & Britt, 2014).

Only very few studies have focused on ICT teachers' perceptions regarding the issue under study. For example, Bulu et al. (2017) revealed that preservice ICT teachers' were not as ready as they should for dealing with students' internet safety problems, suggesting mostly superficial solutions, such as about referring the problem to the school counselor. As far as inservice ICT teachers, the available studies come mainly from secondary education and concern only cyberbullying (Cassidy, Brown, & Jackson,

[2] Based on the term used in most relevant studies, from this point on and for the rest of the present article the term "ICT teachers" will be used in order to present relevant findings of the literature as well as the results of the present study.
[3] Secondary school teachers whose expertise is not ICTs

2012; Chou & Peng, 2007; Tomczyk, 2019), without paying the required attention to other equally online risk behaviors among students (e.g., excessive internet use, unintentional access to harmful online content). Nevertheless, even these studies have not focused exclusively on inservice ICT teachers, as they also include in their sample school teachers of other specialties and/or school administrators. As a result, these studies do not offer "clear" findings regarding ICT teachers' related perspective. Furthermore, based on these minimal findings, a contradictory picture arises: On the one hand, ICT teachers confess awareness of and concern about students' online risk activities (e.g., extent of anonymous online friendships, sexting, cyberbullying) (Cassidy et al., 2012; Chou & Peng, 2007; Tomczyk, 2019), acknowledging that promoting safe cyber-navigation in the school context should constitute a teachers' priority. On the other hand, they admit that they are not fully informed about the extent of risk students are exposed to through online friendship, feeling at the same time unable to manage this issue (Cassidy et al., 2012; Chou & Peng, 2007).

Compared to the very limited international literature, almost no Greek relevant study has been identified by authors. It seems that, so far, most researchers have focused primarily on secondary school ICT teachers' perceptions regarding their curriculum, course teaching, interaction with their students and their training needs (e.g., Kallivretaki, 2016; Konstantinou, Pellas, & Georgiou, 2014; Manika, 2018; Varsos, 2016) but not on the issue under study.

Furthermore, attention should be drawn to the fact that based on the limited international findings from secondary school ICT teachers, we are not allowed to draw respective conclusions regarding primary school ICT teachers' related perspective. Primary schools, compared to secondary schools, are organized and operate in a different level (e.g., less anxious school climate, closer interpersonal relationships and stronger cooperation within the school community, launch of students' digital literacy). These parameters, according to teachers, seem to affect more positively their perceptions and their predisposition towards getting involved responsibly in managing school issues and their school work generally (Anagnostopoulou, 2005; Wong, Chong, Choy, Wong, & Goh, 2008), compared to secondary school personnel. Nevertheless, it is still to be confirmed if this is valid or not for the specific issue of primary school students' online risk behavior.

Another important issue that emerges from the available literature is that, so far, ICT teachers' related perceptions are reflected only through a self-reported questionnaire (Bulu et al., 2017; Cassidy et al., 2012; Chou & Peng, 2007). This means that teachers have to express their perceptions regarding a students' online risk behavior, such as cyberbullying, in a more "theoretical" or "general" level, without a specific context or condition under which the students' behavior is taking place described to them. However, compared to a self-reported questionnaire, teachers' responses to hypothetical scenarios seem to reflect more effectively the way they perceive and respond (e.g., perceived seriousness / confidence/likelihood to intervene) to specific situations where students engage in online risk behaviors. This is because hypothetical scenarios describe conditions very close to the school reality, eliciting in that way more honest responses from teachers (Alexander & Becker, 1978; Martin, 2006; Poulou, 2001). Actually, related studies based on teachers' perceptions regarding cyberbullying among students, have revealed contradicting findings, depending on whether a self-reported questionnaire or hypothetical scenarios were used. For example, teachers, despite their positive perceptions of cyberbullying in schools (e.g., high perceived awareness), tend to underestimate the seriousness of the issue and their likelihood to intervene when they face specific episodes in hypothetical scenarios (e.g., Boulton et al., 2014; Byers, Caltabiano, & Caltabiano, 2011; Craig et al., 2011; VanZoeren & Weisz, 2017). Taking into consideration that no related study seems to make use of both research tools (self-reported questionnaire and hypothetical scenarios), as well as the fact that our perceptions of an issue (e.g., student problem behavior), which are gradually formed and are considered relatively permanent, usually predict the way we approach (e.g., confidently, willingly) specific circumstances of this issue (e.g., episodes of students' problem behavior) (Filippou & Christou, 2001; Kao & Tsai, 2009; Martin, 2006; Wilson, 2006), a clear research need has emerged: to further investigate and clarify the relationship between ICT teachers' perceptions (e.g., perceived

awareness/school involvement) and their responses to hypothetical scenarios regarding online risk behaviors among primary school students (e.g., perceived seriousness / confidence/likelihood to intervene).

In summary, to cover the research gaps mentioned above, the present study aimed to answer the following research questions: What are the primary school ICT teachers' perceptions regarding online risk behaviors among primary school children (perceived awareness/confidence to intervene/school involvement/adequacy of uneversity training)? How do primary school ICT teachers approach hypothetically related incidents among students (perceived seriousness / confidence/likelihood to intervene)? Does the kind of the hypothetical scenario affect ICT teachers' repsonses? In the context of a holistic interpretation model, what is the network of the relationships between the primary school ICT teachers' perceptions and their responses to the hypothetical scenarios under study, which can predict their declared likelihood of intervention in the scenarios? The theoretical model of linking the variables of the present study is illustrated in Figure 1.

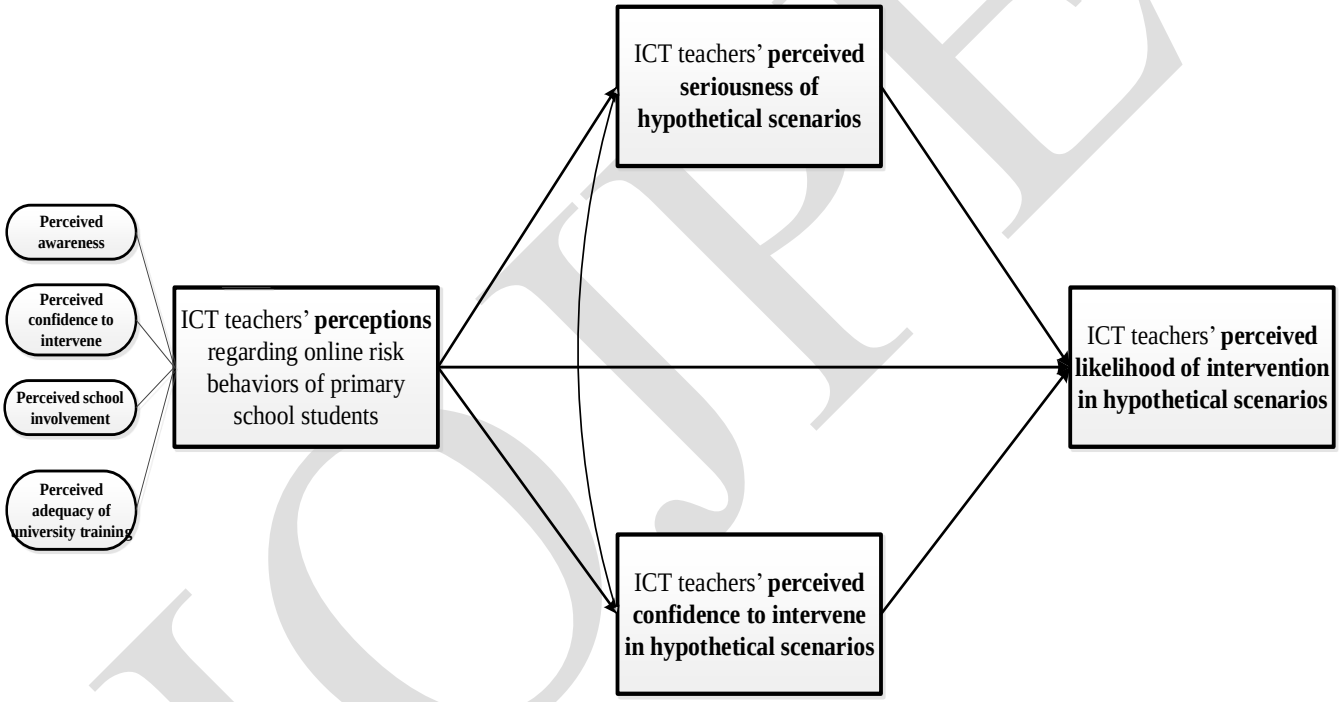


Figure 1. Hypothetical structural model of the network of relationships among variables
Note: The convex arrow shows the correlation between the variables

Regarding the first three research questions no research hypothesis can be deduced, due to the limited (or absent) and contradictory findings. As far as the fourth research question, based on the relevant literature (Filippou & Christou, 2001; Martin, 2004; Wilson, 2006), it was expected that primary school ICT teachers' perceptions regarding online risk behaviors of primary school students (perceived awareness/confidence to intervene/school involvement/adequacy of uneversity training) directly and positively predict their responses to the hypothetical scenarios (perceived seriousness / confidence/likelihood to intervene) (Hypothesis 1). Additionally, it was expected that primary school ICT teachers' perception of seriousness and confidence to intervene in hypothetical scenarios positively mediate the relationship between their perceptions and their declared likelihood of intervention in the hypothetical scenarios (Ajzen, 1991; Bauman & Del Rio, 2006; Boulton et al., 2014; Craig et al., 2000; Dedousis-Wallace et al., 2014; Ellis & Shute, 2007; VanZoeren & Weisz, 2017; Yoon, 2004; Yoon & Kerber, 2003) (Hypothesis 2).

METHOD

Procedure

After the approval of the survey by the Greek Ministry of Education, Research and Religious Affairs, an email was sent to the 900 selected primary schools, asking the principals to promote the email to the ICT teachers in their school. The email included details about the identity of the study and the researchers (authors of the article) as well as the relevant link of the survey questionnaires that were designed using the online Google Drive platform. The answers of the 138 ICT teachers from the 138 responding primary schools were automatically entered in a logistic sheet of the platform. The above process was initially carried out on a pilot basis, with fewer schools and ICT teachers (N=31). Due to the fact that the pilot study did not lead to a modification of the survey questionnaires, which were then promoted to the sample of the main study, the pilot sample were included to the final sample. The survey questionnaires were completed outside of school hours and their duration was estimated at around 10′-15′. The research was based on the voluntary participation of the ICT teachers and ensured the anonymity and confidentiality of the data.

Participants

The sample included exclusively ICT teachers of all the Regional Education Directorates of Greece, who work in primary schools with revised educational programs. Out of the 1.336 Greek primary schools that follow the revised educational program, nine hundred (900) were randomly selected to participate in the study, taking into consideration the geographic region and the student population of each county. Out of the 900 selected schools 138 responded to the survey, resulting in a sample of 138 ICT teachers (response rate 15.3%) made up of 60 men (43.5%) and 78 women (56.5%). Regarding their demographic characteristics, the majority of them were 35 to 39 years old (40.6%) and had 10 to 14 years of work experience (42.8%). Despite the small response rate (15.3%), the ICT teachers that completed the questionnaire come mainly from schools in the geographical regions of Central Macedonia (39.9%) and Attica (19.6%), which are among the largest in Greece and have a student population that is representative of the whole Greek student population (Pan-Hellenic School Network, n.d.).

Data collection

For the present study, a set of self-reported questionnaires was used, which were presented and answered electronically. Initially, information was provided on most of the common students' online risk behaviors, which constitute the focus of the present study, followed by demographic questions. The questionnaire included two main parts. The first part consisted of four hypothetical scenarios regarding students' online risk behaviors, investigating accordingly the related responses from ICT teachers. The second part assessed related perceptions from ICT teachers. The two parts of the questionnaire are presented in detail below:

Hypothetical scenarios of students' online risk behaviors

The first part consisted of four (4) hypothetical scenarios (A, B, C, and D), which referred to four different incidents of online risk behaviors among primary school students (see Appendix). Scenario A referred to contact with inappropriate images on Facebook in a computer classroom, scenario B to excessive internet use outside of the school, scenario C to denigration via email outside the school, and scenario D to mockery via mobile phone in the school corridor. The researchers (and authors of this paper) structured the first two scenarios (A, B) while considering the fact that students' exposure to harmful virtual content via social networking sites and excessive internet use are not often investigated even though they constitute common forms of online risk behaviors among children and adolescents (e.g., Ki Sook & Kyunghee, 2009; Livingstone & Bober, 2004; Livingstone et al., 2010, 2011; Valcke, Schellens, Van Keer, & Gerarts, 2007). The last two scenarios (C, D) were translated and adapted to Greek from the cyberbullying scenarios found in Boulton et al. (2014) and Byers et al. (2011). Each scenario was followed by three questions eliciting the following ICT teachers' responses: (a) their perceived *seriousness* of the incident described ("In your opinion, how serious is the above

situation?"); (b) their perceived *confidence to intervene* ("How confident do you feel to intervene in the above situation?"), and, (c) their perceived *likelihood of intervention* ("How likely are you to intervene in the above situation?"). The answers were rated on a five-point scale ranging from 1 ("Not at all serious", "Not at all confident", "Not at all likely") to 5 ("Very serious", "Very confident", "Very likely"). The internal reliability (Cronbach's alpha) for the above three parameters proved satisfactory (a. perceived *seriousness a* = .684, b. perceived *confidence to intervene a* = .846, c. perceived *likelihood for intervention a* = .727).

Perceptions of students' online risk behaviors

This part of the questionnaire included 22 proposals/statements that investigate ICT teachers' perceptions regarding online risk behaviors among primary school students. This part was based on Li's questionnaire, which was designed to investigate Preservice Teachers' Perceptions of Cyberbullying (Li, 2008). Particularly, the questions investigated preservice teachers' (a) perceived *awareness* of cyberbullying (e.g., "Cyberbullying is a problem in schools"), (b) perceived *confidence to manage* this issue (e.g., "I feel confident in managing cyberbullying"), (c) beliefs about the commitment of the school (perceived *school involvement*) in preventing and addressing the phenomenon (e.g., "Schools should develop policies on cyberbullying"), and (d) perceived *adequacy of* teachers' *university training* regarding cyberbullying (e.g., "My current university education has been preparing me to manage cyberbullying"). For the purpose of the present study, besides translating Li's questionnaire into Greek (by the method of direct and reverse translation), all the necessary legislative modifications were made so that the proposals/statements refer to in-service ICT teachers, while the word "cyberbullying" was replaced by the phrase "online risk behaviors" to include all the kinds of students' online risk behaviors, where the study focused. The answers were given to a 5-point Likert-type scale, ranging from 1 ("Absolutely disagree") to 5 ("Absolutely agree").

Table 1. Confirmatory Factor Analysis of questionnaire on perceptions and correlations among the factors

	F1	F2	F3
7. Primary schools should develop policies on students' online risk behaviors.	.538		
9. Teachers should use a curriculum on online risk behaviors to teach children.	.587		
11. School administrators should organize school-wide activities to deal with students' online risk behaviors.	.644		
12. Surveys should be given to children to ask them about their online experiences.	.578		
14. Primary schools should discuss students' online risk behaviors with parents.	.639		
15. Primary school assemblies should address students' online risk behaviors.	.680		
16. Primary schools should link with community resources to deal with students' online risk behaviors.	.710		
17. TV and other media should discuss students' online risk behaviors.	.595		
19. Primary school resources should be used to help teachers deal with students' online risk behaviors.	.522		
22. In comparison to other topics I wanted covered in my university education, students' online risk behaviors is just as important.	.548		
1. Online risk behavior is a problem among primary school students.		.517	
2. Children are affected by online risk behaviors.		.787	
3. I am concerned about primary school students' online risk behaviors.		.709	
4. I feel confident in identifying primary school students with online risk behaviors.			.890
5. I feel confident in managing primary school students with online risk behaviors.			.857

	F1	F2	F3
F1	-		
F2	.535**	-	
F3	.245**	.211*	-

Note1: **F1**: Factor "Perceived school involvement", **F2**: Factor "Perceived awareness", **F3**: Factor "Perceived confidence to manage", Note 2: all of the above standardized loadings among the three factors are statistically significant ($p < .05$)
Note3: * $p < .05$, ** $p < .00$

In the ICT teachers' answers, initially, exploratory factor analysis was applied using the main component method and Varimax type rotation (KMO = .753, Bartlett Chi-square = 466.30, $p < .001$). Three factors emerged with an eigenvalue > 1.0 and a significant interpretive value: Factor 1 = *Perceived school involvement*, explaining 20.86% of the total variance, Factor 2 = *Perceived awareness*, explaining 15.34% of the total variance, and Factor 3 = *Perceived confidence to manage*, explaining 12.76% of the total variance. A confirmatory factor analysis was then performed, using the Mplus programe with the Maximum Likelihood method, which confirmed the above model (Table 1). The model has a very good fit, $\chi^2_{(87,\ N = 295)} = 167.295$, $p < .05$, CFI = .955, TLI = .946, RMSEA = .037, SRMS = .038. The correlations between the three factors are presented in Table 1. The internal consistency indexes for the three factors are: Factor 1 ($\alpha = .771$), Factor 2 ($\alpha = .629$) and Factor 3 ($\alpha = .768$). The affinities (according to Pearson's correlation coefficient r) of the score of each question by each factor with the sum of the scores of the remaining questions of the same factor are considered satisfactory[4]: Factor 1, from $r = .35$ to $r = .62$, Factor 2, from $r = .35$ to $r = .52$, and Factor 3, $r = .62$.

RESULTS

To depict the ICT teachers' perceptions and their responses to the hypothetical scenarios, descriptive statistics was used. To investigate the effect of the hypothetical scenarios on the ICT teachers' responses, repeated measures Anova was performed. To investigate the dyadic relations between the variables involved (perceptions, responses to scenarios), a series of Pearson correlation analyses was carried out (Pearson r). The confirmation of the research hypotheses (Hypothesis 1 and 2) was checked by applying path analysis to the data (using the Mplus programe with the Maximum Likelihood method) to depict the network of relationships among the variables involved, which leads to the ICT teachers' declared likelihood of intervention in the scenario incidents.

ICT teachers' perceptions regarding online risk behaviors of primary school students

According to the statements of the ICT teachers, it seems that their *perceived awareness* of students' online risk behaviors is at higher levels ($M = 4.36$, $SD = .46$), as is their *perceived school involvement* in the prevention and treatment of this issue ($M = 4.41$, $SD = .58$), with most preferable (from 88% to 96%, approximately) preventive practices the adoption of a school policy that secures children's safe online behavior, classroom and school-based prevention actions, collaboration with parents and community, and promotion of a secure online culture through media. On the contrary, ICT teachers' *perceived confidence to manage* students' online risk behaviors is at a lower level ($M = 3.88$, $SD = .73$). Finally, on ICT teachers' *perceived adequacy of their university training*[5] regarding the issue under study, more than half of them (51.5%) agree/totally agree that their university studies offer adequate training on this issue. However, 71% of the ICT teachers admit that they would like better university training on how to handle students' online risk behaviors, while almost 81% of them declare that the issue under study is just as important as other topics covered in ICT teachers' university education.

ICT teachers' responses to hypothetical scenarios

Based on the ICT teachers' responses to the questions that followed the four hypothetical scenarios, their perceived *seriousness* of the incidents described in the scenarios and their perceived *likelihood of intervention* are at higher levels ($M = 4.51$, $SD = .47$ and $M = 4.50$, $SD = 50$, respectively), compared to their perceived *confidence to intervene* in the incidents of the scenarios ($M = 3.89$, $SD = .64$).

[4] In a sample of 300 and 600 people, loadings of more than .29 and .21, accordingly, are accepted (Field, 2005).
[5] For the parameter of ICT teachers' *perceived adequacy of university training* regarding the issue under study, answers to the relevant questions are depicted by percentages and not by *Mean* and *SD*, as the above parameter was not confirmed as a distinct factor in the questionnaire of perceptions.

Effect of hypothetical scenarios on ICT teachers' responses

The content of the scenarios seemed to affect statistically significantly ICT teachers' perceived *confidence to intervene*, Pillai's Trace = .134, $F_{(3, 135)} = 6.969$, $p < .001$, partial $\eta^2 = .134$, as well as their perceived *likelihood of intervention* in each incident, Pillai's Trace = .258, $F_{(3, 135)} = 15.664$, $p<.001$, partial $\eta^2 = .258$. Violation of the Sphericity assumption of Mauchly's W ($p<.05$) led to Huynh-Feldt's correction of degrees of freedom in the two above-mentioned cases: perceived *confidence to intervene*, $F_{(2.8, 379.41)} = 8.554$, $p < .001$, partial $\eta^2 = .059$, and perceived *likelihood of intervention*, $F_{(2.9,402.91)} = 13.899$, p<.001, partial $\eta^2 = .092$.

Pairwise comparisons between scenarios, applying the Bonferroni criterion ($p < .012$), showed that ICT teachers feel more confident to intervene in the case of the student who secretly watches inappropriate Facebook images in the computer classroom (Scenario A) ($M = 4.07$, $SD = .77$), and less confident in the case of the mockery of a student via mobile phone by his classmates in the school corridor (Scenario D) ($M = 3.80$, $SD = .75$). Accordingly, ICT teachers stated that they were more likely to intervene in Scenario A ($M = 4.75$, $SD = .59$), while they considered their intervention less likely in the case of the student's denigration by email from her friends outside the school premises (Scenario C) ($M = 4.38$, $SD = .76$). It should be highlighted that the moderate-to-low partial η^2 in the above results implies that the difference among the ICT teachers' responses to the four scenarios, although statistically significant, should be interpreted with caution.

Correlations between variables

In Table 2, it is clear that there are positive correlations among the ICT teachers' responses to the scenarios (perceived seriousness/confidence to intervene/likelihood of intervention) (from $r = .323$ to $r= .535$, $p < .001$), as well as among their perceptions regarding online risk behaviors of primary school students (perceived awareness/confidence to manage/school involvement) (from $r = .219$ to $r = .466$, $p < .001$). Furthermore, it is observed that ICT teachers' perceptions under study are positively correlated with their responses to the hypothetical scenarios (from $r = .219$ to $r = .681$, $p < .001$).

Table 2. Correlations among variables

	1	2	3	4	5	6
1 Perceived seriousness	-					
2 Perceived confidence to intervene	.323**	-				
3 Perceived likelihood of intervention	.504**	.535**	-			
4 Perceived awareness	.535**	.380**	.453**	-		
5 Perceived confidence to manage	.499**	.630**	.392**	.466**	-	
6 Perceived school involvement	.270**	.681**	.417**	350**	.219**	-

Note 1: **$p < .01$

Note 2: No statistically significant correlations ($p > .05$) were omitted.

Path analyses

To map the network of the relationships among the variables involved (perceptions, responses to scenarios) leading to the ICT teachers' perceived *likelihood of intervention* in the incidents of the scenarios (independent variable), a series of preliminary analyses of linear stepwise regressions was performed to check the predictive relationships between the variables per two. Meeting the assumptions of normality, in the path analyses were included only those variables that had statistically significant predictive relationships among them. Without any missing cases, the path models that emerged from the ICT teachers' answers had good fit indexes: $\chi^2_{(38, N=138)} = 41.815$, p>.05 (CFI= .993, TLI= .989, RMSEA=0.067, SRMR=0.081) (Figure 2).

IOJPE
ISSN: 1300 – 915X
www.iojpe.org
International Online Journal of Primary Education 2020, volume 9, issue 1

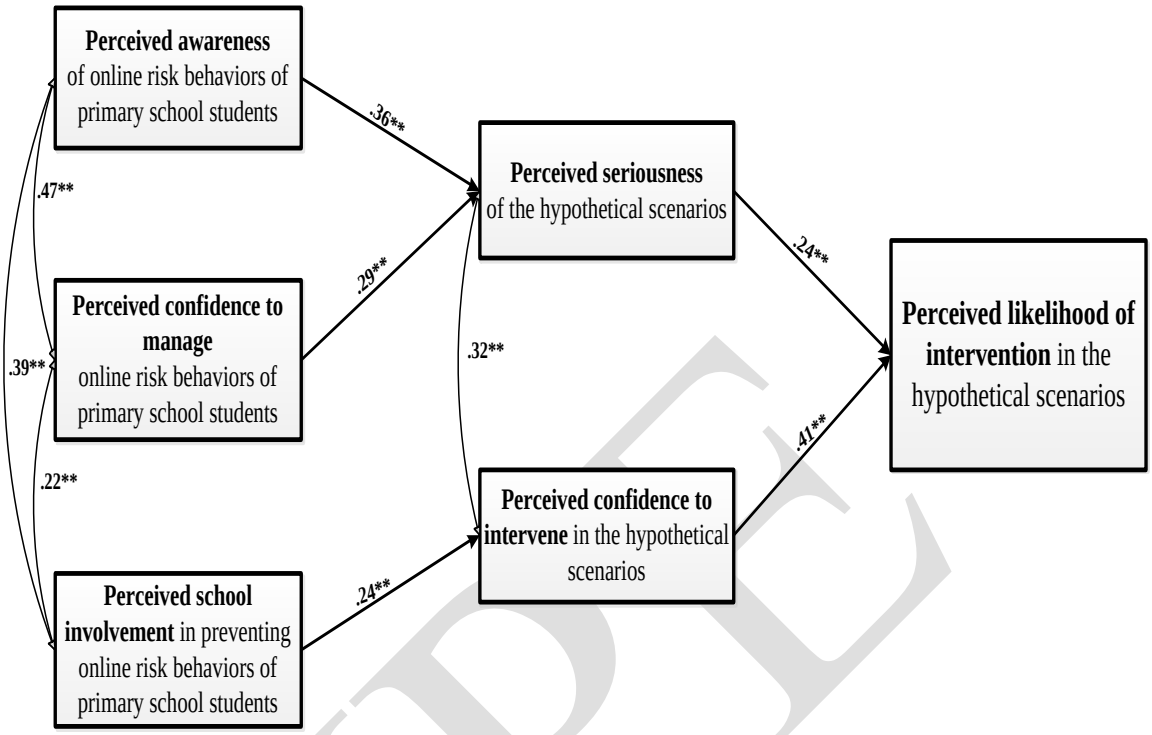


Figure 2. Schematic representation of the path model for the ICT teachers' perceived likelihood of intervention in the scenarios

Note 1: The values on the arrows are standardized coefficients of the model. The values next to the convex arrows are correlation coefficients.
Note 2: ** $p < .01$

According to Figure 2, there are positive correlations among ICT teachers' perceptions under study (perceived awareness/confidence to manage/school involvement) (from $r = .22$ to $r = .47$, $p < .001$), as well as between their perceived seriousness of the hypothetical scenarios and their perceived confidence to intervene in ($r = .32$, $p < .001$).

Furthermore, as can be seen from Figure 2, ICT teachers' perceptions of online risk behaviors of primary school students constitute direct and positive predictors of ICT teachers' perceived seriousness and their perceived confidence to intervene in the incidents of the scenarios. In particular, ICT teachers who think that they are aware of primary school students' online risk behaviors (perceived awareness) and feel capable of managing this issue (perceived confidence to manage) tend to perceive the relevant scenario incidents as serious. Also, ICT teachers who support school involvement in preventing and addressing online risk behaviors among primary school students (perceived school involvement) appear more confident about their ability to intervene in the specific scenario incidents.

By examining the statistically significant mediating role of ICT teachers' perceived *seriousness* and their *confidence to intervene* in the scenario incidents in the relationship between their relevant perceptions under study, on the one hand, and their perceived likelihood of intervention in the scenario incidents, on the other hand, the following was found: ICT teachers' perceived *awareness* of the issue under study (Z[6] = 2.35, $p < .05$) and their belief that they are capable of managing it (perceived *confidence to manage* it) ($Z = 2.20$, $p < .05$) indirectly and positively predict their perceived likelihood of intervention in the scenario incidents through their perceived *seriousness* of the scenario incidents. Furthermore, ICT teachers' belief about the holistic type of school involvement in preventing primary

[6] Z = standardized normal distribution value

school students' online risk behaviors (perceived *school involvement*) seemed to indirectly and positively predict their perceived likelihood of intervention in the scenarios through their perceived confidence to intervene in ($Z = 5.39$, $p < .01$). The above findings imply that ICT teachers, regardless of their general positive perceptions regarding online risk behaviors among primary school students (e.g., high perceived awareness/school involvement), to declare their likely intervention in specific relevant students' cases, have to first perceive these cases as serious and feel confident to intervene in and handle them.

DISCUSSION

The present study aimed to investigate ICT teachers' perceptions of online risk behaviors during school age, as well as how they respond to similar hypothetical incidents among students. At the same time, in the context of a holistic interpretative model, the study examined the mediating role of ICT teachers' perceived seriousness and their perceived confidence to intervene in these incidents in the relationship between their perceptions under study, on the one hand, and their declared likelihood of intervention in the hypothetical incidents, on the other hand.

ICT teachers' perceptions and responses to hypothetical scenarios regarding online risk behaviors of primary school students

Regarding the descriptive findings of the study, ICT teachers state that they are aware of online risk behaviors among primary school children and support the involvement of the school community in preventing and addressing the issue. Also, ICT teachers, even though more than half of them consider that they have been adequately trained during their university studies regarding students' online risk behaviors, do not feel particularly capable of managing this issue effectively. The perceptions mentioned above of ICT teachers seemed to be reflected when they faced such incidents among students as those described in the hypothetical scenarios. That is, while ICT teachers state that they perceive as serious the incidents described, and although they feel likely to intervene, they do not feel sufficiently confident to do it. The above findings seem to reflect partially the conclusions based on some of the limited studies on secondary school ICT teachers (Cassidy et al., 2012; Chou & Peng, 2007; Tomczyk, 2019). Namely, on the one hand, ICT teachers of these studies state aware of and sensitized about students' online risk behaviors, such as anonymous online friendships while, on the other hand, they feel uncertain or unable to manage and intervene effectively in this issue (Cassidy et al., 2012; Chou & Peng, 2007; Tomczyk, 2019).

First, the findings of the present study could imply that the favorable conditions prevailing in primary schools (e.g., closer interpersonal relationships and stronger cooperation within the school community, launch of students' digital literacy), as perceived by school personnel (Anagnostopoulou, 2005; Wong et al., 2008), may not be enough to make ICT teachers feel more confident in securing a safe online culture among students. Furthermore, given the fact that in recent years emphasis has been laid on schools, especially in Greece, regarding actions on information (for teachers) and prevention of children's safe online navigation (e.g., Thematic Network on Internet Security, 2014), the aforementioned findings could possibly suggest primary school ICT teachers' inability to translate into practice what they already know about effective ways of preventing and addressing students' online behavior problems. This suggestion is more highlighted by taking into consideration the fact that 71% of the primary school ICT teachers admitted that they would like better university training on how to handle students' online risk behavior. Alternatively, the above findings could reveal the teachers' tendency to discard their responsibility to intervene in students' behavior problems that usually take place outside the school context (Athanasiades & Psalti, 2011), such as online risk behavior. In the latter case, it is confirmed that "police role" is usually adopted by teachers, regardless of their specialty, in episodes of traditional bullying among students, as teachers often choose to intervene only in episodes inside the school environment, which is supervised by them (Boulton, 1997).

Effect of hypothetical scenarios on ICT teachers' responses

Regardless of the context where students' online risk behavior takes place, the way primary school ICT teachers tend to approach and manage such incidents seems to depend also on the kind of behavior concerned. Specifically, ICT teachers are considered to be more confident to intervene in the case of the student who secretly views inappropriate Facebook images in the computer classroom (Scenario A), compared to the other scenarios. The fact that Scenario A evolves into the main teaching area of ICT teachers seems to enhance their sense of confidence to completely control and, consequently, better manage the incident. Based on the above finding, it is not surprising that ICT teachers expressed a correspondingly higher likelihood of intervention in Scenario A, compared to other scenarios. It is possible that Scenario A, which happens within the school environment, is estimated to be easier in terms to management, as it includes only one student while the particular place where it evolves (computer classroom) favors the implementation of measures (e.g., installation of additional filters) that may guarantee more permanent results. On the contrary, Scenario D (student's mockery via mobile phone by his classmates in the school corridor), although it also takes place inside the school, is obviously appreciated by ICT teachers as more complicated to deal with because more students are involved and, therefore, a larger number of people and/or families need to be informed. Also, the fact that Scenarios B (student with excessive internet use at home) and C (student's denigration via email by her friends outside of the school) take place outside the school context can inhibit ICT teachers from taking the responsibility to intervene, possibly throwing the burden on the family. In other words, the above findings suggest that ICT teachers, no matter what incidents they feel confident about and likely to intervene in, ultimately seem to choose to get involved mainly in those cases that are not only taking place within their area of responsibility (school environment) but also appear more manageable (e.g., including fewer students). Nevertheless, the above tendency of ICT teachers needs further investigation due to the lack of similar findings.

It is also worth mentioning that ICT teachers' perceived seriousness of the four scenarios was not significantly differentiated based on the content of the scenarios. This could be interpreted twice: On the one hand, the fact that ICT teachers usually do not receive undergraduate training regarding psycho-educational issues and didactic approaches (Liakopoulou, 2009) is likely to inhibit the adoption of a more sensitized perspective on the use of new technologies. A perspective that could allow ICT teachers to distinguish the dimensions of a specific scenario incident as more serious compared to other scenarios. On the other hand, of course, it could be argued that ICT teachers, due to their specialized knowledge and high level of familiarity with internet use, may be able to appreciate more clearly and objectively the seriousness of some students' online behaviors without entertaining the tendency to demonize them.

The network of the relationships among ICT teachers' perceptions and responses to hypothetical scenarios

From path analyses results, it was found that ICT teachers' (positive or negative) perceptions of online risk behaviors among primary school students (e.g., high/low perceived awareness/school involvement) contribute to their (positive or negative respectively) responses to the relevant hypothetical scenarios (e.g., high/low perceived seriousness/confidence to intervene), confirming in that way Hypotheses 1 and other similar studies (Filippou & Christou, 2001; Martin, 2004; Wilson, 2006). Furthermore, it was found that ICT teachers' perceived seriousness and confidence to intervene in the hypothetical scenarios positively mediate the relationship between their perceptions under study and their perceived likelihood of intervention in the scenarios, confirming Hypotheses 2 and relevant findings as well (Ajzen, 1991; Bauman & Del Rio, 2006; Boulton et al., 2014; Craig et al., 2000; Dedousis-Wallace et al., 2014; Ellis & Shute, 2007; VanZoeren & Weisz, 2017; Yoon, 2004; Yoon & Kerber, 2003). Specifically, it seemed that when ICT teachers feel aware of students' online risk behaviors in school (perceived awareness) and able to manage this issue (perceived confidence to manage) they tend to perceive as serious relevant incidents among students, like those of the hypothetical scenarios, and thus indicate their possible intervention in them (perceived likelihood of intervention). It is worth noting that ICT teachers' perceived confidence to manage the issue of online

risk behaviors among primary school children did not directly predict (as someone would expect it) their perceived confidence to intervene in the relevant hypothetical incidents among students. An important predictive role in this was played by ICT teachers' perception of responsible school involvement in preventing and addressing the issue under study (perceived school involvement). Taking into consideration that ICT teachers interact with the students in the classroom during only one or two teaching hours per week, it makes sense that the feeling of overall responsibility among the school community (perceived school involvement) towards the prevention of students' online risk behaviors is perceived by ICT teachers as a crucial aspect of this issue. In other words, this feeling of general responsibility perhaps makes ICT teachers believe that they can effectively manage similar episodes among students, as they do not feel alone in this effort, which encourages them to declare their possible involvement in such incidents. The above finding, although needs further investigation, highlights those areas where the emphasis should be placed in school ICT teachers' training regarding students' online safety. For example, holistic-type interventions to this issue, involving all the members of the school community, could be an important aspect during ICT teachers' university training. Something that probably is not the case and maybe justifies the fact that ICT teachers' *perceived adequacy of* their past *university training* towards the issue under study did not seem to predict significantly their responses to hypothetical scenarios.

As far as the fact that the primary school ICT teachers' perceptions under study (perceived awareness/confidence to manage/school involvement) seemed to indirectly predict their perceived likelihood to intervene in the scenario incidents, through their perceived seriousness and confidence to intervene, the following could be stated: ICT teachers' positive perceptions of online risk behaviors among primary school children do not seem to automatically imply their stated likelihood and willingness to intervene in relevant episodes among students. This seems to happen as long as these episodes are considered serious and manageable by ICT teachers. The latter is in line with the broader interpretive framework of the Theory of Planned Behavior and other relevant findings, where teachers' perceived seriousness of bullying/victimization incidents among students and their perceived confidence to deal with them significantly predict teachers' likelihood and final decision to intervene (Bauman & Del Rio, 2006; Boulton et al., 2014; Craig et al., 2000; Dedousis-Wallace et al., 2014; Ellis & Shute, 2007; VanZoeren & Weisz, 2017; Yoon, 2004; Yoon & Kerber, 2003).

Conclusions, limitations and future research

Summarizing the above findings, it is noted that primary school ICT teachers, although generally declare to be aware and sensitized about online risk behaviors among children, do not feel confident enough to manage this issue effectively. Actually, when they come up with similar incidents among students, they prefer to intervene mainly in cases that are less complicated in terms of management (e.g., that happens inside the school or involves one student). Moreover, the way ICT teachers' designate the issue under study as one requiring intervention in the case of a student who performs an online risk behavior seems to require that the case is estimated as serious and manageable. This study constitutes the first attempt to construct a holistic interpretative model of how ICT teachers approach episodes of students involved in online risk behaviors. Information about the degree of ICT teachers' awareness and sensitization on this issue, their self-confidence, as well as their beliefs about school's related responsibility contributes to improving, modifying or designing new relevant training actions for ICT teachers. These actions should focus on aspects of the issue which seem to determine ICT teachers' potential intervention in related incidents among students (perceived likelihood to intervene). Namely, these actions should focus on enhancing ICT teachers' awareness of the serious dimensions of different incidents of children's online risk behaviors (perceived seriousness), as well as their self-confidence in dealing with every type of incident (perceived confidence to intervene), no matter how complex or simple it seems in its management. Furthermore, training actions should give emphasis on different ways that ICT teachers can make the school community get involved in the prevention and/or intervention of students' online risk behaviors, enhancing in that way ICT teachers' sense of school responsibility towards this issue (perceived school involvement), which in turn seems to determine

their self-confidence and potential intervention in related students' incidents. For example, within this purpose, training actions can make use of real or hypothetical cases of students' online risk behaviors, cases that will address different kinds of online behaviors (not only cyberbullying) taking place inside or outside the school, with one or more students involved, where ICT teachers, according to each scenario, will be asked to organize a school prevention and/or intervention plan. The proposals mentioned before imply that these training actions for ICT teachers should be long-term and experiential, and not as usually just one-day workshops based on lectures.

Undoubtedly, the findings of the present study should be taken into consideration with caution as they are subject to limitations. In particular, the relatively small sample of ICT teachers and the possibility of socially acceptable answers may affect the generalizability and the internal validity of the data, while the restriction to the quantitative method does not allow an in-depth qualitative investigation of the ICT teachers' perspective. At the same time, the present study encourages new similar studies to be conducted, not only on ICT teachers, but also on other members of the primary school community (e.g., school principals), combining quantitative and qualitative data.

REFERENCES

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50,* 179-211. https://doi.org/10.1016/0749-5978(91)90020-T

Alexander, C., & Becker, H. (1978). The use of vignettes in survey research. *Public Opinion Quarterly, 42,* 93–104. https://doi.org/10.1086/268432

Athanasiades, C., & Psalti, A. (2011). Knowledge and view of secondary school teachers on bullying in school [in Greek]. *Hellenic Journal of Psychology, 8,* 66-95.

Anagnostopoulou, M. (2005). *The interpersonal relationships between teachers and students in the classroom - theoretical analysis and empirical approach* [in Greek]. Unpublished Doctoral dissertation. Thessaloniki, Greece: Department of Philosophy and Pedagogy, Aristotle University of Thessaloniki.

Antoniades, N., & Kokkinos, M. K. (2013). Cyber-bullying and cyber-victimization among children and adolescents: frequency and risk factors [in Greek]. *Preschool & School Education, 1*(1), 138-169.

Bauman, S., & Del Rio, A. (2006). Preservice teachers' responses to bullying scenarios: Comparing physical, verbal, and relational bullying. *Journal of Educational Psychology, 98*(1), 219-231. http://dx.doi.org/10.1037/0022-0663.98.1.219

Beringer, A. (2011). *Teacher's perceptions and awareness of cyberbullying among middle school students.* Unpublished Master's thesis. New York: The College at Brockport, State University of New York.

Boulton, M. J. (1997). Teachers' views on bullying. Definitions, attitudes and ability to cope. *British Journal of Educational Psychology, 67,* 223-233. http://dx.doi.org/10.1111/j.2044-8279.1997.tb01239.x

Boulton, J. M., Hardcastle, K., Down, J., Fowles, J., & Simmonds, A. J. (2014). A comparison of preservice teachers' responses to cyber versus traditional bullying scenarios: Similarities and differences and implications for practice. *Journal of Teacher Education, 65*(2), 145-155. https://doi.org/10.1177/0022487113511496

Buabeng-Andoh, C. (2012). Factors influencing teachers' adoption and integration of information and communication technology into teaching: a review of the literature. *International Journal of Education and Development using Information and Communication Technology (IJEDICT), 8*(1), 136–155. https://doi.org/10.1080/09523987.2018.1439712

Bulu, S., Kavuk-Kalender, M., & Keser, H. (2017). Pre-Service ICT Teachers' Recommendations for School Internet Safety. In M. Simonson, & D. Seepersaud, *Annual Proceedings - Jacksonville: Volumes 1 & 2* (pp. 93-97). Jacksonville, FL.

Byers, L. D., Caltabiano, J. N., & Caltabiano, L. M. (2011). Teachers' attitudes towards overt and covert bullying, and perceived efficacy to intervene. *Australian Journal of Teacher Education, 36*(11), 105-119. http://dx.doi.org/10.14221/ajte.2011v36n11.1

Cassidy, W., Brown, K., & Jackson, M. (2012). "Under the radars": Educators and cyberbullying in schools. *School Psychology International, 33*(5), 520-532. https://doi.org/10.1177/0143034312445245

Campbell, M., Whiteford, C., & Hooijer, J. (2019). Teachers' and parents' understanding of traditional and cyberbullying. *Journal of School Violence, 18*(3), 388-402.

Chou, C., & Peng, H. (2007). Net friends: Adolescents' attitudes and experiences vs. teachers' concerns. *Computers in Human Behavior*, *23*(5), 2394-2413. https://doi.org/10.1016/j.chb.2006.03.015

Craig, M. W., Henderson, K., & Murphy, G. J. (2000). Prospective teachers' attitudes toward bullying and victimization. *School Psychology International*, *21*(1), 5-21. https://doi.org/10.1177/0143034300211001

DeCoito, I., & Richardson, T. (2018). Using technology to enhance science literacy, mathematics literacy, or technology literacy: Focusing on Integrated STEM concepts in a digital game. *In Information and Technology Literacy: Concepts, Methodologies, Tools, and Applications* (pp. 1561-1582). IGI Global.

Dedousis-Wallace, A., Shute, R., Varlow, M., Murrihy, R., & Kidman, T. (2014). Predictors of teacher intervention in indirect bullying at school and outcome of a professional development presentation for teachers. *Educational Psychology*, *34*(7), 862-875. https://doi.org/10.1080/01443410.2013.785385

DePaolis, K., & Williford, A. (2015). The nature and prevalence of cyber victimization among elementary school children. *Child & Youth Care Forum*, *44*(3), 377-393. https://doi.org/10.1007/s10566-014-9292-8

Eden, S., Heiman, T., & Olenik-Shemesh, D. (2013).Teachers' perceptions, beliefs and concerns about cyberbullying. *British Journal of Educational Technology*, *44*(6), 1036-1052. https://doi.org/10.1111/j.1467-8535.2012.01363.x

Ellis, A. A., & Shute, R. (2007). Teacher responses to bullying in relation to moral orientation and seriousness of bullying. *British Journal of Educational Psychology*, *77*, 649-663. https://doi.org/10.1348/000709906X163405

Evans-Andris, M. (1995) Barrier to Computer Integration. *Journal of Research on Computing in Education*, *28*(1), 29-45. https://doi.org/10.1080/08886504.1995.10782150

Field, A. (2005). *Discovering statistics using SPSS* (2nd ed.). SAGE: London.

Filippou, G., & Christou, K. (2001). *Educational texts, emotional factors and learning of Mathematics.* Athens, Greece: Atrapos.

Gillen, J., Arnott, L., Marsh, J., Bus, A., Castro, T., Dardanou, M., & Holloway, D. (2018). *Digital Literacy and young children: towards better understandings of the benefits and challenges of digital technologies in homes and early years settings.* COST Action IS1410/ EECERA Digital Childhoods SIG. Retrieved December 9, 2019, from https://strathprints.strath.ac.uk/65712/1/Gillen_Arnott_PB_2018_Digital_Literacy_and_Young_Children_Towards_Better_Understandings_of_the_Benefits.pdf

Graves, N. T. (2013). *Bridging the divide: A case study investigating digitally-wise teacher perceptions of middle school cyberbullying.* Unpublished Doctoral dissertation. Lynchburg, Virginia: Liberty University.

Hinduja, S., & Patchin, J. W. (2010). Cyberbullying and self-esteem. *Journal of School Health*, *80*(12), 614-621. https://doi.org/10.1111/j.1746-1561.2010.00548.x.

Hunley-Jenkins, K. J. (2012). *Principal perspectives about policy components and practices for reducing cyberbullying in urban schools.* Unpublished Doctoral dissertation. Ohio: The Ohio State University.

Hyland, J. B. (2014). *High school principals' perceptions of cyberbullying.* Unpublished Doctoral dissertation. Pennsylvania: Department of Professional Studies in Education, Indiana University of Pennsylvania.

Kallivretaki, A. (2016). *Perceptions of ICT teachers of primary and high schools of the prefecture Chania regarding the curriculum and the teaching of their subject* [in Greek]. Unpublished Master dissertation. Patras: Hellenic Open University.

Kao, C., & Tsai, C. (2009). Teachers' attitudes toward web-based professional development, with relation to Internet self-efficacy and beliefs about web-based learning. *Computers & Education*, *53*(1), 66-73. https://doi.org/10.1016/j.compedu.2008.12.019

Kavuk, M. (2016). *Development of middle and high school cyberbullying awareness profiles and evaluation of cyberbullying awareness training activities for school stakeholders.* Unpublished Master dissertation. Ankara, Turkey: Ankara University.

Ki Sook, K., & Kyunghee, K. (2009). Parent related factors in internet game addiction among elementary school students. *Journal of Korean Academy of Child Health Nursing*, *15*(1), 24–33. https://doi.org/10.4094/jkachn.2009.15.1.24

Konstantinou, N., Pellas, N., & Georgiou, G. (2014). Virtual worlds and visual programming: perceptions of ICT teachers for the added value of the open sim environment [in Greek]. *3rd Panhellenic Educational Conference of Imathia*, 347-361.

Kwok-Wing, L., & Keryn, P. (2004). Information and communication technology (ICT) in secondary schools: the role of the computer coordinator. *British Journal of Educational Technology*, *35*(4), 461-475. https://doi.org/10.1111/j.0007-1013.2004.00404.x

Lazonder, A. W., Walraven, A., Gijlers, H., & Janssen, N. (2020). Longitudinal assessment of digital literacy in children: Findings from a large Dutch single-school study. *Computers & Education, 143*, 1-8. https://doi.org/10.1016/j.compedu.2019.103681

Lee, M., & Winzenried, A. (2009). *The use of instructional technology in schools: Lessons to be learned.* Victoria, Australia: Australian Council for Educational Research (ACER Press).

Li, Q. (2008). Cyberbullying in schools: An examination of preservice teachers' perception. *Canadian Journal of Learning and Technology*, *34*(2), 75-90. https://www.learntechlib.org/p/42831/.

Liakopoulou, M. (2009). *Pedagogical and teaching training of secondary school teachers: requirements and quality criteria* [in Greek]. Unpublished Doctoral Thesis. Thessaloniki, Greece: Department of Philosophy and Pedagogy, Aristotle University of Thessaloniki.

Livingstone, S., & Bober, M. (2004). *UK children go online: Surveying the experiences of young people and their parents.* London: LSE Research Online. Retrieved October 29, 2014, from http://eprints.lse.ac.uk/395/1/UKCGOsurveyreport.pdf

Livingstone, S., Haddon, L., Görzig, A., & Ólafsson, K. (2010). *Risks and safety for children on the internet: the UK report.* London: London School of Economics & Political Science (LSE).

Livingstone, S., Haddon, L., Gorzig, A., & Ólafsson, K. (2011). *EU kids online: Final report. EU Kids Online.* London, UK: London School of Economics & Political Science (LSE).

Macaulay, P. J., Betts, L. R., Stiller, J., & Kellezi, B. (2018). Perceptions and responses towards cyberbullying: A systematic review of teachers in the education system. *Aggression and Violent Behavior*, *43*, 1-12.

Machimbarrena, J. M., & Garaigordobil, M. (2018). Prevalence of bullying and cyberbullying in the last stage of primary education in the Basque Country. *The Spanish Journal of Psychology, 21*, E48. https://doi.org/10.1017/sjp.2018.41

Mandal, S. (2020). ICT exposure and its relationship with academic self-efficacy and achievement of adolescent students: The field-level study in India and Fiji. In D. Maiti, F. Castellacci, & A. Melchior (Eds), *Digitalisation and Development* (pp. 407-434). Singapore: Springer. https://doi.org/10.1007/978-981-13-9996-1_16

Manika, E. (2018). *Computer programming: ICT teachers' views on the role of gender in students' performance and interaction between teachers-students* [in Greek]. Unpublished Master Thesis. Patras: Hellenic Open University.

Martin, E. (2006). Vignettes and respondent debriefing for questionnaire design and evaluation. In S. Presser, J. M. Rothgeb, M. P. Couper, J. T. Lessler, E. Martin, J. Martin, & E. Singer (Eds), *Methods for Testing and Evaluating Survey Questionnaires* (pp.149-172). New York: Wiley.

Ministry of Education (MINEDU) (2010). Ministerial decision (Φ3/609/60745/Γ1, 28/5/2010) "Setting of 800 Primary Schools with Revised Educational Program" [in Greek]. Retrieved January 3, 2019, from http://1dim-giann.pel.sch.gr/school/orismos_sxoleion_EEP.doc.

Mitzner, D. K. (2011). *Perceptions of cyberbullying from secondary school administrators in Texas*. Unpublished Doctoral dissertation. Texas, TX: Texas A&M University.

Moore, D. H. (2018). *A qualitative analysis of middle school administrators' perceptions of cyberbullying*. Unpublished Doctoral dissertation. Maryland: University of Maryland.

Nikolopoulou, K., & Gialamas, V. (2016). Barriers to ICT use in high schools: Greek teachers' perceptions. *Journal of Computers in Education, 3*(1), 59-75. https://doi.org/10.1007/s40692-015-0052-z

Olenik-Shemesh, D., & Heiman, T. (2014). Exploring cyberbullying among primary children in relation to social support, loneliness, self-efficacy, and well-being. *Child Welfare, 93*(5), 27-46. https://search.proquest.com/docview/1804902205?accountid=8359

Pan-Hellenic School Network (n.d.). Retrieved, March 23, 2017 from http://www.sch.gr/.

Poulou, M. (2001). The role of vignettes in the research of emotional and behavioural difficulties. *Emotional and Behavioral Difficulties, 6*, 50-52. https://doi.org/10.1080/13632750100507655

Ryan, T., & Kariuki, M. (2011). A two-year comparative analysis of cyberbullying perceptions of Canadian (Ontario) pre-service educators. *Journal of the Research Center for Educational Technology (RCET), 7*(2), 100-111.

Smith, P. K., Sundaram, S., Spears, B. A., Blaya, C., Schäfer, M., & Sandhu, D. (Eds.). (2018). *Bullying, cyberbullying and student well-being in schools: Comparing European, Australian and Indian perspectives*. United Kingdom: Cambridge University Press.

Stauffer, S., Heath, M., Coyne, S., & Ferrin, S. (2012). High school teachers' perceptions of cyberbullying prevention and intervention strategies. *Psychology in the Schools, 49*(4), 353-367. https://doi.org/10.1002/pits.21603

Stewart Jr, W. R. (2019). *A Study of Middle School Administrators' Perspectives and Awareness of Cyberbullying.* Unpublished Doctoral dissertation. Mississippi: Mississippi College.

Thematic Network "Internet Safety". (2014). Retrieved March, 20, 2017 from http://isecurenet.sch.gr/portal/?cat=22.

Thomas, M. K., O'Bannon, W. B., & Britt, G. V. (2014). Standing in the schoolhouse door: Teacher perceptions of mobile phones in the classroom. *Journal of Research on Technology in Education, 46*(4), 373-395. https://doi.org/10.1080/15391523.2014.925686

Tomczyk, Ł. (2019). What do teachers know about digital safety?. *Computers in the Schools, 36*(3), 167-187. https://doi.org/10.1080/07380569.2019.1642728

Touloupis, T., & Athanasiades, C. (2014). The risky use of new technology among elementary-school students: internet addiction and cyber-bullying [in Greek]. *Hellenic Journal of Psychology, 11*, 83-110.

Twardowska-Staszek, E., Zych, I., & Ortega-Ruiz, R. (2018). Bullying and cyberbullying in Polish elementary and middle schools: Validation of questionnaires and nature of the phenomena. *Children and Youth Services Review, 95*, 217-225.

United Nations Educational, Scientific and Cultural Organization [UNESCO]. (2009). Retrieved March 2, 2019, from https://en.unesco.org/

Urhahne, D., Schanze, S., Bell, T., Mansfield, A., & Holmes, J. (2009). The role of the teacher in computer-supported collaborative inquiry learning. *International Journal of Science Education, 32*(2), 221-243. https://doi.org/10.1080/09500690802516967

Valcke, M., Schellens, T., Van Keer, H., & Gerarts, M. (2006). Primary school children's safe and unsafe use of the Internet at home and at school: an exploratory study. *Computers in Human Behavior, 23*(6), 2838-2850. https://doi.org/10.1016/j.chb.2006.05.008

VanZoeren, S., & Weisz, N. A. (2017). Teachers' perceived likelihood of intervening in bullying situations: Individual characteristics and institutional environments. *Journal of School Violence, 17*(2), 258-269. https://doi.org/10.1080/15388220.2017.1315307

Varsos, D. (2016). *The educational needs of ICT teachers: An empirical investigation in secondary education schools in the prefecture of Fthiotida* [in Greek]. Unpublished Master Thesis dissertation. Patras: Hellenic Open University.

Vélez, A. P., & Zuazua, I. I. (2017). Digital literacy and cyberconvivencia in primary education. *Procedia - Social and Behavioral Sciences, 237*, 110–117. https://doi.org/10.1016/j.sbspro.2017.02.050

Wilson, H. J. (2006). Predicting student attitudes and grades from perceptions of instructors' attitudes. *Teaching of Psychology, 33*(2), 91-95. https://doi.org/10.1207/s15328023top3302_2

Wong, F. A., Chong, S., Choy, D., Wong, Y. I., & Goh, C. K. (2008). A comparison of perceptions of knowledge and skills held by primary and secondary teachers: From the entry to exit of their preservice programme. *Australian Journal of Teacher Education, 33*(3), 77-93. http://dx.doi.org/10.14221/ajte.2008v33n3

Yoon, S. J. (2004). Predicting teacher interventions in bullying situations. *Education and Treatment of Children, 27*(1), 37-45.

Yoon, S. J., & Kerber, K. (2003). Elementary teachers' attitudes and intervention strategies. *Research in Education, 69*, 27-35. https://doi.org/10.7227/RIE.69.3

APPENDIX

Scenarios

Scenario A

While you are in the computer classroom with your students, you notice that a male student watches secretly, via computer, inappropriate images (e.g., with violent content) on Facebook without your permission. This is not the first time you notice this student's behavior.

Scenario B

During the last month, you notice that one of your female students is usually sleepy in the classroom, while her school performance declines. To find out what happens you ask the student during a school break about this situation. The student confides you that during the last weeks she spends daily many hours surfing on the Internet, often until late at night.

Scenario C
Mary and Johanna, students of your classroom, had been best friends. They had a massive argument. The next day Johanna's inbox in her email account was full and there were numerous postings on her "my Space" page. The emails and postings were rude and offensive. When she looked at her account, she realized that a group email had been sent from her own account making racially discriminating comments as well as rude and hurtful comments about all her friends and classmates. She had not written the emails. When friends, Johanna had told Mary the passwords of her hotmail and "my Space" accounts.

Scenario D
Just before your lesson you witness a group of children in the corridor outside the computer classroom looking at their mobile phones and laughing. You overhear them mention a name of a student in a mocking manner. You have witnessed similar situations before mocking the same student in the same way.

IOJPE

ISSN: 1300 – 915X
www.iojpe.org

International Online Journal of Primary Education *2020, volume 9, issue 1*

CHARACTERISTICS OF TEACHERS' RECOMMENDED SOCIAL SUPPORT STRATEGIES FOR PRIMARY STUDENTS WITH ASD

Jamie GLEDHILL
Warragamba Public School, NSW Australia
ORCID: https://orcid.org/0000-0002-5459-6730
jamiegledhill13@gmail.com

Janet L. CURRIE
University of Technology Sydney, Australia
ORCID: https://orcid.org/0000-0003-0424-2966
Janet.Currie@uts.edu.au

Received: 13-01-2020 **Accepted:** 19-05-2020 **Published:** 30-06-2020

Abstract

This study explored teachers' perspectives of the use of social support for students with ASD through a qualitative case study. The four main themes to emerge from the interview data reflecting the teachers' recommended strategies for social support included (a) Teachers' views of students with ASD and social support, (b) Recommendations for best practice at the whole-school level, (c) Promoting acceptance, and (d) Practical classroom strategies. The final theme contained five subthemes or a range of practical classroom social support strategies teachers may use, including Routine, Developmental Play and Group Work, Explicitly Teaching Awareness of Emotions and Body Language, ICT, and Integration. Despite being limited to the views of two busy teachers, this study highlights the significant and vital need for the use of social support for students with ASD. This study directs teachers, schools, universities and pre-service teachers towards the use of positive pedagogies and approaches to inclusive education. It is recommended that all primary teachers consider the best practice of social support within their own classroom, and further research be carried out to investigate best practice in fostering and supporting the social growth and needs of students with ASD.

Keywords: Social Support, Practical Strategies, Autism Spectrum Disorder (ASD), Primary Education, Inclusive

INTRODUCTION

A Background to Autism Spectrum Disorder (ASD)

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition that affects roughly 230,000 people Australia-wide, with four times as many boys being affected than girls (Autism Spectrum Australia, 2019). It is important to note that cultural contexts give rise to different knowledges of autism. Firstly, Neurobiological perspectives define ASD as a polygenetic developmental neurobiological disorder which causes abnormalities in social interaction, emotional expression and recognition, and communication (O'Dell et al., 2016). In contrast, sociocultural perspectives focus on ASD as an identity that is materially and discursively produced within specific socio-cultural contexts (O'Dell et al., 2016).

The importance of obtaining accurate neuro-biological diagnoses of ASD is acknowledged as important in supporting and resourcing students' educational outcomes. When diagnosing an individual with ASD, Australian professionals use The Diagnostic and Statistical Manual of Mental Disorders (5th edition), or 'DSM-5', produced by the American Psychiatric Association (2013). This manual uses five key criteria for the diagnosis of ASD (American Psychiatric Association, 2013):

- Persistent deficits in social communication and social interaction across multiple contexts.
- Restricted, repetitive patterns of behavior, interests, or activities.
- Symptoms must be present in the early developmental period (but may not become fully manifest until social demands exceed limited capacities or may be masked by learned strategies in later life).
- Symptoms cause clinically significant impairment in social, occupational, or other important areas of current functioning.

- These disturbances are not better explained by intellectual disability or global developmental delay.

The nature of these symptoms individually varies person to person on a range from mild to severe (Mayada, Gauri, & Fombonneet, 2012). Therefore, the term 'spectrum' is used to describe the vast range of difficulties that people with ASD may experience and the degree to which they may be affected. As such, the DSM-5 uses a three-tiered scale to identify the level of support each individual with ASD requires (American Psychiatric Association, 2013).

Students with ASD often struggle with social interactions as their condition inhibits their ability to communicate with others and understand how others think and feel (Raising Children, 2020). Furthermore, as students with ASD do struggle in social situations they are more vulnerable to bullying and more likely to have reduced self-confidence and internalized mental health issues such as anxiety, over sensitivity hyperactivity and self-injurious and stereotypic behaviors (Cappadocia, Weiss, & Pepler, 2011).

The prevalence of ASD in Australia is rapidly increasing, especially amongst children and adolescence (Australian Bureau of Statistics, 2016). Currently, one in every seventy people in Australia is diagnosed with ASD. This amounts to a staggering 353,880 people. Alarmingly, the prevalence of this condition has increased by forty percent in the last five years (Autism Spectrum Australia, 2019). Even though rates of ASD in Australia have almost tripled in recent years (AIHW, 2017), with the condition most likely to affect people under 25 years (ABS, 2016), fewer than half of Australian teachers feel prepared to teach students with special needs when they finish training (OECD, 2018).

As more Australian children are being diagnosed with this condition and enrolled in primary schools (Manning, Bullock, & Gable, 2009). Therefore, there is a growing need for educators to be provided with the training to understand the vast complexities that are presented by the many dimensions of this condition and how to best support them.

Social Support for Students with ASD in the Educational Setting

Social support is a multidimensional construct used by educators to support students with ASD, through either physical or psychological means. In its basic sense, an individual experiencing social support will feel more connected and less isolated (Raising Children, 2020). They will feel boosted and it is thought that this will aid the learning and relationship process (Hart & Whalon, 2011; House, 1981). Some examples of support strategies that educators may implement in the classroom include; suggesting games, sharing or exchanging objects, initiating conversations, making complements or commenting on an ongoing game (Garrote, Semier Dessemontent, & Moser Optiz, 2017).

Building levels of social support for students with ASD revolves around effective interpersonal transactions which involve one or more of the following: instrumental aid, emotional concern, information about the environment and appraisal (House, 1981). Therapeutically, social support also provides security for individuals as they transition through different parts of their lives. When individuals develop a sense of belonging, they may have a more positive sense of self-worth and outlook on life experiences (Cobb, 1976). An example of social support may include receiving willing assistance from peers on a group task, or knowing that others accept them for their unique self (Sarason, Levine, Basham, & Sarason, 1983). There are also strong relationships between the levels of social support individuals receive and one's overall health and psychological wellbeing. In particular, informal support, such as that provided by friends and family, has been shown to be effective in reducing stress and depression-related somatic symptoms among children with ASD (Kasari, Locke, Gulsrud, & Rotheram-Fuller, 2011). Developing the social skills of students with ASD is one of the most challenging areas for educators (Robertson, Chamberlain, & Kasari, 2003). Scaffolding group work and specifically educating peers and raising awareness about autism can assist. Providing primary students with ASD the opportunity to build confidence and experience greater social support through relaxed, positive social interactions may help foster relationships and decrease the social

challenges of students with ASD (Autism Speaks, 2018; Bolourian, Stavropoulos, & Blacher, 2019). Furthermore, social support also allows peers to better understand difference and develop empathy (Rotheram-Fuller, Kasari, Chamberlain, & Locke, 2010).

According to AutismCRC (2020), one of the biggest challenges faced by educators is ensuring that the learning needs of autistic students can be successfully met within educational contexts. Despite the increased responsibility of primary teachers to create a classroom that meets the needs of students with ASD, the literature indicates they currently lack awareness of specific support strategies (Gledhill & Currie, 2020; Lindsay, Proulx, Thomson, & Scott, 2013). While many teachers agree in-principle with the use of social support, they say do not necessarily understand how to implement this (Robertson, Chamberlain, & Kasari, 2003). Therefore, this study sought to address the gap in the current research literature by sharing rare insights of primary educators of how they best support students with ASD in practice.

METHOD

The aim of this study was to investigate teachers' insights of the use of social support for students with ASD. This study was framed and formed around the following research question; "How do teachers perceive the use of social support for students with ASD in the classroom?" In order to address this research question, a qualitative case study was conducted, drawing on the lived experiences of two experienced primary teachers from Sydney, Australia ('Annabelle' and 'Kate'). A qualitative research approach was appropriate as we were attempting to better understand a little known phenomena or aspect of our social environment (Patton, 1980). Following ethical approval by the relevant institutional committee, informed consent was obtained with the two participants taking part in a series of two semi-structured interviews. The interviews aimed to gain an open-ended understanding of the teachers' perspectives of the use of social support strategies and explore the meaning they give to their use.

The interview transcripts were transcribed verbatim and content analyzed using the six-phased approach outlined by Braun and Clarke (2006). In this method, the researcher familiarizes themselves with the data through transcribing, extensive reading and initial labelling. Secondly, a systematic coding or labelling and categorization process occurs, noting the emergence of initial themes through a process of constant comparison and data saturation. A thematic map is developed containing data representative of the major themes. Ongoing checking and analysis refines the specific characteristics and generation of a clear title for each major theme, followed by reporting. As both teachers were accessed via a sample of convenience, the findings cannot be generalized to the wider population. However, in accordance with qualitative research, the number of participants per se was not of concern, rather accessing rich data and gaining a deeper understanding of the concepts was of prime consideration. The main themes to emerge from the data are featured in the next section.

FINDINGS

Characteristics of Social Support Strategies Teacher Recommend for Students with ASD

The main themes to emerge from the interviews reflecting the teachers' recommended strategies for social support included (a) Teachers' views of students with ASD and social support, (b) Recommendations for best practice at the whole-school level, (c) Promoting acceptance, and (d) Practical classroom strategies. Table 1 below outlines the key characteristics of each sub-theme within each of these overarching categories.

Table 1. Characteristics of recommended strategies for supporting students with ASD

Overarching Theme	Sub-Themes	Key Features
Teachers' Views of Students with ASD & Use of Social Support	The Need for Social Support for Students with ASD	Social support is vital for students with ASD. This notion is supported by the literature, which highlights that the prevalence of ASD amongst children is increasing.
	Behaviors of Students with ASD varies	No student with ASD is the same. The way the condition affects each individual's behavior and social interactions is different and falls on a spectrum. Therefore, each ASD student's social needs are unique.
	Students with ASD and their Susceptibility to Bullying	The behaviors that students with ASD often display often result in these students being more susceptible to bullying or social stigma.
Recommendations for Best Practice at the Whole School Level	Communication Amongst Stakeholders	Communication allows educators to build a greater understanding of the unique needs of each student. It also provides students with stability and consistency across both the school and home environment. However, the literature suggests that communication amongst stakeholders is not being carried out effectively.
	Professional Development	It is vital that teachers engage in frequent professional development and reflection to improve their understanding of ASD and how to provide social support to students to foster their interactions. However, the participants suggested that much of their professional practice involves learning from mentors and other teachers. The literature suggests that such learning is not always beneficial to students as it means that practices being carried out in schools are not correlating to the modern research and literature.
Promotion of Acceptance	Educating Others	Participants outlined that the social interactions of students with ASD can be improved by increasing the understandings held by others, including students. This notion is supported by the literature, which suggests that when students are provided with an understanding of difference, they develop empathy and compassion.
	School Ethos	When schools develop an inclusive ethos, the stereotypes of the school community are challenged and the expectations of acceptance, inclusion and diversity may be raised.
Practical Classroom Strategies	Routine	Routines provide security for the student and allow them to feel safe and comfortable. When students are relaxed, they are more open to social situations. However, the literature does suggest that students do need to be exposed to change to build their ability to be flexible.
	Developmental Play and Group Work	Developmental play is recommended as a natural setting to introduce social skills to students. However, the literature suggests that developmental play needs to be developed based on the interests of students. In contrast to the literature, Kate suggested

		that educators could guide the students to do particular activities to build their social flexibility.
	Explicitly Teaching Awareness of Emotions and Body Language	Explicitly teaching students about their emotions and body language helps them to interact with others as they learn how to read social cues or improve their emotional intelligence.
	ICT	Despite ICT being a relatively new resource, both the participants and the literature expressed its effectiveness when supporting the social interactions of students with ASD. However, the participants only highlighted the use of applications, whereas the literature suggests that there is a wider range of ICT resources available.
	Integration	Students with ASD and their peers benefit socially from integration. However, its effectiveness is dependent on the school, the teacher, and the individual needs of the student.

Teachers' Views

Both participants strongly believe that students with ASD required essential social support structures and strategies in place in the primary school setting. The participants describe common behaviors typically displayed by students with ASD, including poor communication skills, "no eye contact," "withdrawal", and even becoming aggressive "lashing out" or as an avenue to "let out frustrations." Typical behaviors witnessed included "withdrawal and anxiety" and even violence such as "hitting" and "throwing punches." This lack of communication and/or the behavioral challenges often presented must be confronting for an inexperienced teacher (Avramidis & Norwich, 2002; Boyer & Lee, 2001). This data correlates with Barnard, Prior, and Potter's (2000) work, which highlighted that pupils with ASD are much more likely to be excluded from school than pupils with other or no special educational needs.

Social support strategies for primary students were recommended by participants as being designed to meet "the needs of each individual student." The wide range of behaviors of students often described by the participants highlights the importance of educators having the knowledge, confidence, and ample range of strategies available, to be able to effectively support students in regulating their emotions and in communicating their needs effectively. The concept of social support strategies designed to meet the needs of individual students is supported in the literature (Kasa-Hendrickson & Kluth, 2005). When a range of social strategies are implemented, teachers may notice students beginning to have more meaningful conversations. Additionally, their social interactions occur more frequently and last for longer periods of time (Garrote, Semier Dessemontent, & Moser Optiz, 2017).

It was also reported by participants that they felt the behaviors and appearance of some students with ASD often resulted in them being more susceptible to bullying by peers. Kate stated, "Unfortunately because some of our students do look different, we do see some bullying." Annabelle concluded that relationships of students with ASD "can be broken." She said, "Students might think that they are strange or different and not know how to respond." Specifically, the difficulties they experience with communication and interaction impede their ability to engage with peers and form relationships. Therefore, this increases their vulnerability and chances of being bullied frequently and chronically over long periods of time. Furthermore, the literature also suggests that students with ASD are often isolated and bullied as their peers don't understand the behavioral influences of this condition (Hebron & Humphrey, 2013). Some students feel threatened and uncomfortable as they don't have the awareness to understand why students with ASD isolate themselves or act differently to what they perceive to be socially "normal" (Boutot, 2007). Consequently, both of the participants stressed the need for social support and increased connectedness for students with ASD. Through increasing peer

understanding, other students can "become familiar and develop a higher tolerance and understanding of ASD" (Annabelle). This notion of increased tolerance is supported by Eldar, Talmor and Wolf-Zukerman (2010), who suggests that peer awareness allows students to develop empathy and compassion towards their peers with ASD.

Best Practice Approaches and Policies

Kate concluded that she felt it was the necessary for teachers to communicate with a student's family to gain an understanding of each student's individual needs, abilities and who they are. She stated how she felt:

> The parents are the best source. They know their kids they have done it before you for 6 or 7 years. You only have them at school they have the weekends and before and after school, parents are definitely first point of call.

She then went on to explain that:

> If we have a very good relationship with the parents then we can help the parents understand their child, it also helps us understand that child's wellbeing and their social interaction then benefit from that communication.

Annabelle also highlighted that good communication lines also provided teachers with opportunities to better understand the social abilities of each student and how to guide future learning opportunities to incorporate familiar situations and support social growth. Annabelle explained how when she spoke with the parents, it:

> Provides me with an understanding of how they communicate at home, what relationships they have at home. So, cousins, siblings, neighbors, those kinds of things. I also talk to parents about what good relationships they have outside of school so that we can talk about them and use them as examples, here at school.

These findings are in congruence with the research literature (Breitenbach, Armstrong, & Bryson, 2013). Bronfenbrenner (1986) indicates that building relationships with parents and establishing inclusive family-centered support plays a vital role in providing students with opportunities to make social discoveries. Furthermore, Irvine and Lynch (2009) suggest that in order to effectively support the social interactions of students with ASD everyone involved in the education of the students need have open lines of communication with one another. Such collaboration provides students with consistency and stability across both the school and home environment.

Annabelle then went on to explain the difficulties that arise when this communication is not evident:

> The biggest issue we were having was that parents' teachers and therapists were all having different goals. So, at the beginning of the year, we had a big meeting with everyone together and we picked three goals that we wanted the child to work on and then we talked about the common language that we are going to use in terms of those goals…it's really important to have the same clear, concise goal, the same language that we are using to help them achieve that goal.

Whilst the participants and the literature both emulate the importance of teachers communicating with the parents of students with ASD, the literature suggests that such communication is not being effectively carried out in schools (Lilley, 2012). Specifically, the literature suggests that although there are many programs available in schools to promote parent involvement, their implementation and success in schools are lacking (Peterson & Hittie, 2010, Vismara & Rogers, 2008; Whitebread & Bruder, 2007). Meade (2011) states that this may be due to teachers and parents lacking the time and resources to provide opportunities for involvement. The literature also suggests that this lack of communication is often caused by language and cultural barriers (Bang, 2009).

Another vital aspect of providing students with ASD social support that was depicted throughout the interviews was the importance of teachers in the school accessing professional development. This notion aligns with the literature that states, professional development provides teachers with research-based theory, skills, strategies to support the social needs and interactions of students with ASD (Syriopoulou-Delli, Cassimos, Tripsianis, & Polychronopoulou, 2012). Such knowledge empowers

teachers to feel more confident when implementing and supporting students with ASD. However, teachers access to professional development is highly dependent on the school, time constraints and the educational budget (Soto-Chodiman et al., 2012). Therefore, the ethos of the school and their perspective of inclusive education strongly dictate the professional learning that educators are able to undertake (Cologon, 2010).

It was also expressed by both participants that staff and learning teams within the school need to be collaborating and communicating clearly with one another to enhance their professional learning and knowledge so they can effectively support students with ASD. Annabelle suggested that "using our collective brain as a team is really important". Kate specified that she is able to gain strategies by "talking to other professionals about issues and challenges that occur and watching how they interact with the students." Annabelle also outlined that:

> Sharing our knowledge is the best thing, knowing that you are not always going to know everything but there is always someone you can talk to or some more information or research that you can do to always keep learning and keep up to date.

Although the literature indicates teachers commonly provide support, mentor, reflect and learn from one another (Kennedy, 1991), it is also suggested that what teachers learn off one another can be limiting and is not always beneficial to the specific group of students one has in their own class. Explicitly, when young teachers learn from more experienced teachers, they tend to adopt the practices of their mentors. This may partially explain why the pedagogical approaches of teachers are remaining the same despite years of reforms and new research into the way students interact and learn (Kennedy, 1991). Furthermore, the literature suggests that teachers' knowledge of teaching may be tacit, so they don't know how to explain their own practice or guide novices (Sternberg & Horvath, 1999).

Additionally, another imperative approach recommended for the effective support of social interactions of students with ASD was the use of professional reflection amongst professional or teaching groups in the school. Annabelle stated:

> It is always important to have a debrief, not only with the kids but also myself and the Special Needs Learning Officer about what can we do differently next time, what worked, and what didn't.

Kate supported this idea stating:

> I always reflect on what I do and I think well each day is a fresh start so I think that didn't work so well how can I improve to help the child the next day.

She suggested that if she "didn't reflect" on her teaching, she didn't "think the children would improve socially". This aligns with Zeichner and Liston's (2014) educational research indicating that reflective practice allows educators to analyze their practice and identify how they can improve their practice to enhance the learning opportunities of their students. Such reflections result in practice that meets each student's social and academic needs (Zeichner & Liston, 2014).

Promotion of Acceptance

It was outlined by Kate that it is important for a teacher to encourage conversations about ASD amongst students in the classroom. Both participants outlined the example of a school awareness initiative that was implemented across the school for Autism Awareness Day. Annabelle explained:

> We have just finished celebrating Autism Awareness Day and across the whole school. It was expected that each teacher was to teach a lesson on ASD that myself and my team had created to bring about awareness. If the student with ASD understands their own diagnosis it is important that they share that. Especially for the older kids because when they share, there is more understanding and more acceptance. Especially in integration because then their peers have the knowledge to understand why they are different. That knowledge and understanding shapes them to be more accepting of students with ASD.

When asked about the effect of this, Kate stated:

> With some students, you really did notice a difference in the way they talked about and understood students with ASD. Other students didn't, they didn't really connect and would probably call them weird and not have anything to do with them. But I think it does make them more understanding.

Annabelle suggested that sometimes the behaviors that students with ASD display can cause social relationships to fracture or decrease group acceptance. She suggested that the teachers may use discussions with the class to build understanding. She explained:

> Sometimes students feel frightened and I need repair the relationships. I use whole class discussions to build awareness and ensure that students understand difference and everyone feels safe.

These statements made by the participants about peer acceptance are supported by the literature (Vakil, Welton, O'Connor, B, & Kline, 2009).

The participants also stressed the importance of the school's attitude and approach to advocating acceptance of students with ASD, regardless of their background or condition. Kate suggested that having a specialist support unit in the school has created an "in-built culture" of acceptance within the school:

> Having a support unit for a long amount of time in a school and having some of those students integrating into the mainstream classrooms is really important. The students who get to spend time with them become familiar with them and I think they have higher tolerance and understanding of ASD.

She highlighted the importance of encouraging acceptance across the whole school, affirming:

> We also teach acceptance as a part of our school values. It's really important that they understand that they are little bit different and why he helps them to understand how they can approach these students and why they might be acting. It helps social interactions and lowers those barriers. When we see negative behaviors, we speak to those students to give them that understanding and build their tolerance and acceptance of people who are different.

This correlates with a study by Humphrey (2008) that emphasized the ethos of a school as the cornerstone of inclusive education for students with ASD. Furthermore, Humphrey's (2008) study suggested that when the school maintains and encourages a consistent positive focus of inclusion through all aspects of work within the school the stereotypes and expectations of students, parents and teachers are challenged and standards continually raised.

Practical Classroom Strategies

The final theme to emerge indicated that teachers draw on a wide range of approaches to help boost the interactions and academic learning of students with ASD. This theme contained five subthemes: Routine, Developmental Play and Group Work, Explicitly Teaching Awareness of Emotions and Body Language, ICT, and Integration.

Routine

Kate was able to explain how classroom routines build structure, enhance a student's understanding of what is expected and help reduce the chance of conflict arising. She explained:

> Structure and routines help the children to understand. With them understanding, there are less arguments, fights and conflict between the children because they know what they have to do. There is no danger and they feel comfortable because of the routine. So, that helps with their wellbeing and social interactions.

Annabelle also concluded that routines build a safe environment for students:

> When students are feeling safe and secure and they know the expectations, they are more likely to have positive social interactions. They feel comfortable so they are happy to open up and share. You will find that as soon as someone new is in the classroom, they all close in. If there is someone different in the classroom or they are out of routine they kind of shut down, if they are not sure what to expect, so they get really anxious. This stops any social interactions. So, making sure it's consistent making sure they are prepared and that we do things over and over again it eases their anxiety in turn that opens up their social interactions they are more willing to share and engage.

Developmental Play

Developmental play is another effective practical social support strategy recommended by the participants. Annabelle suggested that play is a part of cognitive development for all students. She stated, "We know that with young children the first signs of those social interactions occur through play." Both participants also highlighted how developmental play plays an important role in a student's development of social skills. Annabelle suggested that even if students are not communicating verbally, through play situations, "they are able to interact with students that they might not normally associate with." She continued stating that:

> It gives them a chance to use their imagination and be themselves. When they are comfortable, that's when they are more likely to share and talk and communicate. A lot of our students who do not communicate at all, even during those playtimes they might not communicate verbally, but they are happy to show what they have created. So, they are looking for input and sharing those kinds of things with others.

Kate proposed her view that developmental play provides a teacher with opportunities to develop student's 'social flexibility' in a comfortable environment. She stated:

> We find a lot of the children are drawn to the one activity they like, so to try and encourage them to go to something else they are not interested they like it and that is their space. Sometimes other children will come over and play. Sometimes I take them away, so there is someone different to talk to, so I do try and change it. That allows more social interactions even if they are just side by side.

She also believed that play environments provide a relaxed environment free from anxiety. She felt it was advantageous for including students with ASD as the "interactions are not forced" and it allows an environment where the teacher can highlight social skills such as "looking at the person they are talking to when they are speaking." Kate also stated that it is also an opportunity to "highlight behaviors that are not appropriate and use them as teaching opportunities that are shaped towards the student's social needs."

Currently, the literature emphasizes the need for fostering student's social skills in natural settings. Developmental play is one of the main settings which the literature suggests for introducing social strategies to students. Such settings allow students to relax and feel comfortable. This encourages them to develop the frequency, duration and or quality of the social interactions they engage in (Garrote, Semier Dessemontent, & Moser Optiz, 2017). Although, this study's participants believed that developmental play fosters the social interactions of students with ASD, they did not state how this play should be structured or what developmental play involves. Gillis, Callahan, and Romanczyk (2011) concluded that when ASD students' social interactions are developed through play, the play that they engage in needs to be more tailored, individualized, and therefore 'scaffolded' to be successful. Furthermore, their work outlined that in order for play to foster students' fluent social interactions, it must incorporate highly motivating themes, special interests or a common factor bringing students together, such as a craft activity or sport. Further research regarding the nature of developmental play may be required to help illuminate best practice approaches.

Explicit Teaching of Emotional Awareness and Body Language

The participants both expressed the importance of explicitly teaching students about their emotions and body language. This was rationalized as such understanding was through to help students to interact with others more effectively as they learn how to read social cues or respond in a measured, appropriate manner. Annabelle outlined some of the activities she uses in the classroom to build students awareness of their emotions and body language. For example: "We use a lot of activities on reading body language, so I'm always modelling different body language. I always ask why do you think I felt that way. I didn't use any words?". Kate supported this concept and indicated that many students are not aware of their own emotions. She stated:

> At the beginning of the year, students were not really aware of their emotions they would scream and cry and not be able to tell us if they were happy or sad. So, we have done a lot of work on building that.

> Through our wellbeing program and interventions, we use in class, they have developed a deeper understanding of whether they are happy or sad and that helps them to communicate their needs.

Annabelle also stated that some students are not aware of how they are communicating. She asserted:
I will often mimic the student's behavior so that they can see how they are using their bodies to communicate. They will often respond and say that they didn't even realize that is how they were communicating. So, talking about it as it happens as well making it authentic in a real context is really important to help develop student's awareness of self as it helps them to communicate.

Kate further stressed the importance of teaching students about their emotions and body language in contexts that are relevant to each student. She explained how:

> It is important that we use contexts that students can see themselves in. If we are always using examples that they can't relate to they just think I don't do that. So, we use a lot of modelling when students do display a behavior they can improve. I model it and say this is what you just did. I do it with them all day long and it's really important that they understand it. It's those teachable moments throughout the day.

Annabelle further highlighted the importance of contextual learning and reflecting with students on their emotions. She continued:

> We are doing a lot of dramas and skits and watching videos on how to show different emotions and communicate using our bodies. It is hard in the moment, the students know the theory behind it all but in the moment, their body just does it and they can't stop themselves. So, when that happens we debrief afterwards I could see that you couldn't control yourself what could you do differently next time, I know that you tried really hard and I know that you do know but what could you do next time in that social interaction then it's all about building that relationship afterwards.

The importance of teaching students about emotions and reading body language is congruent with the literature. The literature consistently outlines that students with ASD have trouble reading body language, emotions and social cues of others (Attwood, 2000). Therefore, students with ASD require explicit and repetitive teaching of how individuals use their bodies to express themselves. The literature outlines that educators use observations, modelling and social stories to successfully build students awareness of social cues (Partington & Mueller, 2013). This is also consistent with Bandura's (1977) notion of observational learning and modelling.

Use of ICT Strategies

Annabelle and Kate suggested a range of ICT applications that could be used to support the social interactions of students with ASD. They both discussed a pictorial program called 'PEX', which they felt was beneficial for non-verbal students to communicate using pictures and building sentences to communicate their needs, emotions and wants. Kate highlighted how:

> It helps them to initiate conversations and let me know what they want through pictures. I can get them to repeat the sentences so over time, I can develop that as a way of them having a conversation.
> The program guides them into social interactions so that they feel more comfortable with their peers and teachers. As they use the program, their communication skills I develop and they know the expectation of how to use those key words and how to use visuals to get what they want or need.

Annabelle asserted that many young students with ASD come to school and don't understand that they actually need to communicate. She also suggested that PEX helps students to understand this need. Kate stated:

> It can be really difficult with Kindy kids when parents know their child and what they want and so they don't need to communicate. So, this application gives students two or three options and them being able to identify what they want and them being able to give it to you. It helps us to teach them that for them to receive what they want the need to ask for it.

Kate also stated that she has been using another application she has found helpful called 'Core Words'. She explained:

> A new program I am using with the speech therapist is core words. It is based on about 77 words that we use regularly. From those key words we expand and get students to start using sentences. It has really helped students to build their vocabulary using those core words. Having a more comprehensive vocabulary helps them to communicate and interact with others.

Annabelle further suggested another application called 'Key Words Sign'. She stated:

> This application is used to focus on one word for the week and so just repeating and drilling that word for the week. This app gets students use to having interactions, especially those who have come from preschool where it is free roam. By using key words students are progressively growing their communication skills and engaging in social interactions so that they feel more comfortable with their peers and teachers. They know the expectation of how to use those key words and how to use those visuals to get what they want.

Despite ICT being a relatively new resource utilized in schools, there is a large field of literature that supports its use to facilitate positive social interactions of students with ASD (Bernard-Opitz, Sriram, & Nakhoda-Sapuan, 2001). Specifically, Autism Speaks, one of the largest autism research funders internationally, promotes collaborations among technologists, designers, engineers, and various stakeholders in the ASD community (Bölte, Golan, Goodwin, & Zwaigenbaum, 2010). However, the participants only suggested applications used on i-Pads. This contradicts the literature as ICT is outlined as something much broader, with many more technological resources that foster the social interactions of students with ASD. Some of the technologies mentioned in the literature include virtual reality, video diaries, video modelling, robotics and Interactive Whiteboards (Bölte, Golan, Goodwin, & Zwaigenbaum, 2010). This may suggest that there is a barrier between adoption of ICT in schools and recommended use cited in the emerging literature. This may also indicate that teachers are not being provided with adequate professional development or resources to learn about the latest innovative technologies that are being established.

Integration

Finally, the participants highlighted the importance of integration for students "who are able" (Annabelle). Kate concluded, "It gives them opportunities to access the curriculum and it helps them to focus on their social and academic goals as well". Annabelle supported this notion highlighting the importance of students not only integrating to access the curriculum but also to develop social skills. She asserted:

> A student in my class who is working at stage level for spelling. So, she integrates for spelling because that's something she is successful with. When she is at spelling, she is really successful with spelling but she is not really forming any friendships she is really focused on the lesson. So, she also goes to sport, which is something that really likes. So, she goes to that same class for dancing where that's more of a social thing where you have partners and they work together. So, it's really important that they go for academics and for social to develop those skills.

Kate suggested that "integration allows teachers to guide interactions and set students up for social success." If they don't have the benefit of integration, she explained:

> We try to send them out to different classrooms to find different peer groups, but you often find that because they have been together for so long and are comfortable, they find it hard to branch out of their comfort zone. We find peers in the mainstream that have common interests and having them integrate for sport or things that they really like.

She highlighted how integration provides students with opportunities to socialize with students who are the same age as them. She stated:

> It's very important for them to communicate with children that are the same age as them, we have four kids in Kindy and that's great but I have one boy in year 6 who doesn't get that communication in our classroom.

Annabelle suggested that integration helps to provide controlled situations which help students with ASD to understand and cope with social change. She stated:

> There is a student in my class who likes going to integration but when he goes there, he is a different person. He is very quiet and very meek. Whereas when he is in my room, he is the most outgoing person in the room. So, we are trying to build some friendships with one or two other peers so that they don't feel overwhelmed with everyone trying to be their friend. We are constantly directing them to sit with those peers. We purposely chose those peers as they are really good at encouraging him and they have the same interests to try and build his social confidence.

Literature clearly indicates that both students with ASD and their peers benefit socially from integration. In a study conducted by McGillicuddy and O'Donnell (2004), it was outlined that through integration, students with ASD learn social skills and how to use them appropriately as well as flexibility. However, the success of an inclusion program is dependent on the School Principal and the ethos of the school. If the teachers are not equipped with the time, resources and training to facilitate the social and academic learning of students with ASD then inclusion will not succeed (Scruggs & Mastropieri, 1996).

Furthermore, the participants highlighted that inclusion is important for those students who are able. However, the literature suggests that this is challenging in practice and questions, how is success measured? Who decides if a student is able to fully participate and whether the teachers can capably cope (Florian, 2008; Avamidis, Bayliss, & Burden, 2000).

The notion that a range of support strategies are needed to support each student is a leading notion which the literature strongly supports. The use of routines, peer education, positive school ethos and teaching awareness of body language are all aspects of this study that are in congruence with the literature. However, while the literature and the participants highlight that ICT and developmental play effective social support avenues. The literature suggested many ways to use these strategies that the participants did not mention. This may suggest that there is a gap between the literature and the pedagogical practices of educators. This may be due to the way in which the educators are learning their professional knowledge. Furthermore, the participants highlighted that communication is the cornerstone to implementing effective social support strategies. However, the literature suggested that this is not being implemented in schools. Finally, integration was strongly supported by the participants of this study, whereas the literature surrounding this field of education is very controversial.

DISCUSSION and CONCLUSIONS

The findings from the interviews provided an extremely valuable insight into teachers' perceptions of the use of social support for students with ASD in the primary classroom. Explicitly, this data was gathered in a new way by open-endedly asking for the way that teachers view the need and use of social support in Australian classrooms. Data surrounding teachers' views of social support has not been presented in the literature in this way previously. The participants recommended a range of strategies for use by teachers and schools for the provision of social support for students with ASD. This is useful as the literature suggests that no student with ASD is the same and each student with ASD presents with different social needs.

Despite ICT being a relatively new resource, both of the participants praised its use to support the social interactions and skills of students with ASD. However, the participants only mentioned the use of 'i-pad' applications. In contrast, the literature highlights that there is a wider range of ICT available that can be used to improve and support the social interactions of students with ASD. Some of these resources mentioned in the literature include videoing, robotics, video diaries, video modelling, interactive whiteboards and virtual reality (Bölte, Golan, Goodwin, & Zwaigenbaum, 2010).

This leads to the question, why are primary schools not implementing a wider range of technology? Jager and Lokman (1999) suggest that schools don't have access to enough funding to not only purchase such technologies but also to train staff to effectively implement them effectively. The literature also outlines that rather than adopting ICT transforming pedagogies, it is being used to

maintain existing teaching approaches (Tanner, Dixon, & Verenikina, 2010). This gap between the literature and the experiences of the participants also suggest that the barrier between the practices of schools and the emerging literature (Aresti-Bartolome & Garcia-Zapirain, 2014). Consequently, it is suggested that pre-service teachers must be trained in emerging ICT so that they may bring this knowledge into schools. It is also evident that funding needs to be provided to equip schools with emerging ICT and training to use it so that they may foster the social needs of students with ASD.

Integration was a key strategy that was suggested by both of the participants. The participants suggested that integration allows students to access the curriculum and focus on their academic and social goals. However, this is an extremely controversial aspect in the field of education. According to the literature integration is not always successful as there is a conflict between meeting the social and academic needs of the students with ASD whilst also meeting the needs of the other students in the class (Humphrey & Symes, 2010; Lindsay et al., 2013; Soto-Chodiman et al., 2012; Akgul, 2012). The literature also indicates that many teachers feel overwhelmed as they are not provided with the time or training to adequately meet the needs of students with ASD (Brownell, Adams, Sindelar, & Waldron, 2006). Scruggs and Mastropieri (1996) suggest that whilst teachers are not provided with adequate support, their perceptions of inclusion are tainted and therefore, their inclusive practices will not be successful.

In contrast, the opposing field of the literature supports the use of inclusive practices proposed by the participants. Boutot and Bryant (2005) stressed that when students with ASD are exposed to inclusive settings, they are accepted, visible and members or peer groups. This is vital for students with ASD as having reciprocal relationships with peers is key to a child's social, emotional, and even cognitive development. McGillicuddy and O'Donnell (2004), also highlighted that integration allows students to learn social skills and how to implement them appropriately in social situations. Harper, Symon and Frea (2008) suggest that integration provides opportunities for students to develop their social skills, particularly through the use of peer mediation strategies. This was not something suggested by the participants; however, it is a method that is strongly supported in the literature.

Hence, it is suggested that a school education team should determine if inclusion will contribute to a student's progress towards their social goals and ensure that the teachers facilitating this inclusion have been provided with professional development to support the social needs of these students. It is also suggested that all teachers are provided with training to support students with ASD. Additional barriers include negative and discriminatory attitudes and practices, lack of support to facilitate inclusive education, and inadequate education and professional development for teachers and other professionals. Critical to addressing all of these barriers is recognizing and disestablishing ableism in Australia (Cologon, 2013).

Certain limitations must be considered when interpreting the findings of this study. Firstly, this study is limited to the views of only two teachers participating in the case study analysis. Specifically, the participant selection of this study was purposive. Therefore, each of the participants was willing to volunteer and made it clear to the student researcher that each was passionate about inclusive education and integration. Thus, the findings are not generalizable as the study excluded a broader range of opinions and perspectives such as those of counsellors. Additionally, both of the teachers that are being interviewed are also from the same school. The study did not include a wide range of participants representing various socio-economic backgrounds or school sectors. However, the findings are valuable as primary teachers are extremely busy and to find two willing participants was highly valuable.

As the scope of the study was limited to investigating the use of social support strategies that teachers use within the classroom, the constraints of this study did not allow for analysis of whether the social support strategies cited by the participants were actually successful in assisting the student's social interactions and learning outcomes. Further future studies could include the views of students with ASD to broaden the scope and include their perspectives and voice (Goodall, 2018).

Finally, the findings in this study have offered a considerable amount of information that can be used to establish effective practice that targets the social needs of students with ASD. However, due to the small number of perspectives explored, this study has the potential to limit its findings to a relatively small school locality within the area of metropolitan Western Sydney. It is therefore recommended that further studies be conducted on larger numbers of teachers across different areas and school systems. Conducting a larger study and comparing the results to this study might help other school systems discover additional perspectives on the subject. Furthermore, a future study may focus on measuring the use and effectiveness of the strategies suggested and discussed in this study.

There is a plethora of research conducted on ways to provide students with ASD academic support. However, there has been a lack of literature available targeting the perspectives of teachers towards the use of social support strategies to support the social interactions of students with ASD. According to the Australian Bureau of Statistics (2016), the prevalence of ASD amongst children in Australia continues to grow. This translates to more students enrolling into primary classrooms with this condition. Teachers are required to adhere to the Disability Discrimination Act (Commonwealth of Australia, 1992) and the Disability Standards for Education (Commonwealth of Australia, 2005). This involves educators providing an equitable education for all students. Our research study has contributed to this field of research and the education sector more broadly, by providing a unique and deep understanding of teachers open ended perceptions of social support and its use for students with ASD in primary classrooms.

This study's findings highlight the significant and vital need for the use of social support for students with ASD. The participants highlighted a range of social support strategies that teachers may use within the classroom to support the needs of students with ASD. This study directs teachers, schools, universities and pre-service teachers towards the use of positive pedagogies and approaches to inclusive education. It is recommended that all primary teachers consider the best practice of social support within their own classroom to foster the social growth and needs of students with ASD.

REFERENCES

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC.

Aresti-Bartolome, N., & Garcia-Zapirain, B. (2014). Technologies as support tools for persons with autistic spectrum disorder: a systematic review. *International journal of environmental research and public health*, *11*(8), 7767-7802.

Attwood, T. (2000). Strategies for improving the social integration of children with Asperger syndrome. *Autism*, *4*(1), 85-100.

Australian Bureau of Statistics. (ABS) (2016). *Disability, ageing and carers: Summary of findings, Australia 2015.* Canberra: ABS.

Australian Institute of Health & Welfare (AIHW). (2017). *Autism in Australia*. Retrieved from https://www.aihw.gov.au/reports/disability/autism-in-australia/contents/autism

Autism CRC (2020). *Australian educational needs analysis.* Retrieved from https://www.autismcrc.com.au/our-programs/school-years/australian-educational-needs-analysis

Autism Speaks (2018). *Strategies for Supporting Social Skill Development. School Community Tool Kit.* Retrieved from https://www.autismspeaks.org/tool-kit-excerpt/strategies-supporting-social-skill-development

Autism Spectrum Australia (2019). *Aspect Schools.* Retrieved June 10, 2019, from https://www.autismspectrum.org.au/school/aspect-schools

Avramidis, E., Bayliss, P., & Burden, R. (2000). A survey into mainstream teachers' attitudes towards the inclusion of children with special educational needs in the ordinary school in one local education authority. *Educational Psychology*, *20*(2), 191-211.

Avramidis, E., & Norwich, B. (2002). Teachers' attitudes towards integration/inclusion: a review of the literature. *European Journal of Special Needs Education*, *17*(2), 129-147.

Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice Hall.

Bang, Y. S. (2009). Helping all families participate in school life. *YC Young Children, 64*(6), 97.

Barnard, J., Prior, A., & Potter, D. (2000). *Autism and Inclusion: Is It Working?* London: National Autistic Society.

Bernard-Opitz, V., Sriram, N., & Nakhoda-Sapuan, S. (2001). Enhancing social problem solving in children with autism and normal children through computer assisted instruction. *Journal of Autism and Developmental Disorders, 31,* 377-384.

Bölte, S., Golan, O., Goodwin, M. S., & Zwaigenbaum, L. (2010). What can innovative technologies do for Autism Spectrum Disorders? *Autism, 14*(3), 155–159.

Bolourian, Y., Stavropoulos, K.K.M., & Blacher, J. (2019). Autism in the classroom: Educational issues across the Lifespan. In *Autism Spectrum Disorders - Advances at the End of the Second Decade of the 21st Century*, Michael Fitzgerald (Ed.), IntechOpen, DOI: 10.5772/intechopen.84790. Available from: https://www.intechopen.com/books/autism-spectrum-disorders-advances-at-the-end-of-the-second-decade-of-the-21st-century/autism-in-the-classroom-educational-issues-across-the-lifespan

Boutot, E. A. (2007). Fitting in: Tips for promoting acceptance and friendships for students with autism spectrum disorders in inclusive classrooms. *Intervention in School and Clinic, 42*(3), 156-161.

Boutot, E. A., & Bryant, D. P. (2005). Social integration of students with autism in inclusive settings. *Education and Training in Developmental Disabilities, 40*(1), 14-23.

Boyer, L. & Lee, C. (2001). Converting challenge to success: Supporting a new teacher of students with autism. *Journal of Special Education, 35*(3), 75-83.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101.

Breitenbach, M. M., Armstrong, V. L., & Bryson, S. E. (2013). The implementation of best education practices for a student severely affected by autism. *International Journal of Inclusive Education, 17*(3), 277–294.

Bronfenbrenner, U. (1986). Ecology of the family as a context for human development: Research perspectives. *Developmental Psychology, 22*(6), 723-742.

Brownell, M.T., Adams, A., Sindelar, P., & Waldron, N. (2006). Learning from collaboration: The role of teacher qualities. *Exceptional Children, 72(*2), 169-185.

Cappadocia, M.C., Weiss, J.A., & Pepler, D. (2011). Bullying Experiences among children and youth with autism spectrum disorders. *Journal of Autism and Developmental Disorders, 42*(2), 266-277.

Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine, 38,* 300-314.

Cologon, K. (2013). *Inclusion in education towards equality for students with disability. Issues Paper. Policy recommendations written with Children with Disability Australia.* Macquarie University, Sydney: Children and Families Research Centre, Institute of Early Childhood, Macquarie University.

Cologon, K. (2010). Inclusion is really what teaching is. *ARNEC Connections, 3,* 45-48.

Commonwealth of Australia. (2005). *Disability standards for education.* Retrieved from https://docs.education.gov.au/system/files/doc/other/disability_standards_for_education_2005_plus_guidance_notes.pdf.

Eldar, E., Talmor, R., & Wolf-Zukerman, T. (2010). Successes and difficulties in the individual inclusion of children with

Autism Spectrum Disorder (ASD) in the eyes of their coordinators. *International Journal of Inclusive Education, 14*(1), 97-114.

Florian, L. (2008). Inclusion: special or inclusive education: future trends. *British Journal of Special Education, 35*(4), 202208.

Garrote, A., Semier Dessemontent, R., & Moser Optiz, E. (2017). Facilitating the social participation of pupils with special educational needs in mainstream schools: A review of school-based interventions. *Educational Research Review, 20,* 12-23.

Gillis, J. M., Callahan, E. H., & Romanczyk, R. G. (2011). Assessment of social behavior in children with autism: The development of the behavioral assessment of social interactions in young children. *Research in Autism Spectrum Disorders, 5*(1), 351-360.

Gledhill, J., & Currie, J.L. (2020). Socio-political and educational perspectives of autism spectrum disorder (ASD): A case for inclusive classroom strategies which build social support? *Journal of Education and Human Development, 9* (1), 1-7.

Goodall, C, (2018). 'I felt closed in and like I couldn't breathe': A qualitative study exploring the mainstream educational experiences of autistic young people. *Autism & Developmental Language Impairments, 3,* 1-16.

Harper, C. B., Symon, J. B., & Frea, W. D. (2008). Recess is time-in: Using peers to improve social skills of children with autism. *Journal of Autism and Developmental Disorders, 38*(5), 815-826.

Hart, J. E., & Whalon, K. J. (2011). Creating social opportunities for students with autism spectrum disorder in inclusive settings. *Intervention in School & Clinic, 46*(5), 273–279.

Hebron, J., & Humphrey, N. (2013). Exposure to bullying among students with autism spectrum conditions: A multi-informant analysis of risk and protective factors. *Autism (iFirst),* doi: 10.1177/1362361313495965.

House, J. S. (1981). *Work stress and social support*. Reading, MA: Addison-Wesley.

Humphrey, N. (2008). Including pupils with autistic spectrum disorders in mainstream schools. *Support for Learning, 23*(1), 41–47.

Humphrey, N. & Symes, W. (2010). Responses to bullying and use of social support among pupils with autism spectrum disorders (ASDs) in mainstream schools: A qualitative study. *Journal of Research in Special Educational Needs, 10*(2), 82-90.

Humphrey, N. (2008). Including pupils with autistic spectrum disorders in mainstream schools. *Support for Learning, 23*(1), 41–47.

Humphrey, N., & Symes, W. (2010). Responses to bullying and use of social support among pupils with autism spectrum disorders (ASDs) in mainstream schools: A qualitative study. *Journal of Research in Special Educational Needs, 10(*2), 82-90.

Irvine, A.N., & Lynch, S.L. (2009). Inclusive education and best practice for children with autism spectrum disorder: an integrated approach. *International Journal of Inclusive Education, 13*(8), 845-859.

Jager, A., & Lokman, A. H. (1999). *The impact of ICT in education: The role of the teacher and teacher training.* Wageningen, The Netherlands: Stoas Research.

Kasa-Hendrickson, C., & Kluth, P. (2005). We have to start with inclusion and work it out as we go: Purposeful inclusion for non-verbal students with autism. *International Journal of Whole Schooling, 2*(1), 2–14.

Kasari, C., Locke, J., Gulsrud, A., & Rotheram-Fuller, E. (2011). Social networks and friendships at school: Comparing children with and without ASD. *Journal of autism and developmental disorders, 41*(5), 533-44. doi:10.1007/s10803-010-1076-x

Kennedy, M. M. (1991). Some surprising findings on how teachers learn to teach. *Educational Leadership, 49,* 14-17

Lindsay, S., Proulx, M., Thomson, N., & Scott, H. (2013) Exploring teachers' strategies for including children with autism spectrum disorder in mainstream classrooms. *International Journal of Inclusive Education, 18*(2), 101-122.

Lilley, R. (2012): It's an absolute nightmare: maternal experiences of enrolling children diagnosed with autism in primary school in Sydney, Australia. *Disability & Society, (iFirst).* doi:10.1080/09687599.2012.717882.

Manning, M. L., Bullock, L. M., & Gable, R. A. (2009). Personnel preparation in the area of emotional and behavioral disorders: A re-examination based on teacher perceptions. *Preventing School Failure, 53*, 219–226.

Mayada, E., Gauri, D., & Fombonneet, E. (2012). Global prevalence of autism and other pervasive developmental disorders. *Autism Research, 5*(3), 160-179.

McGillicuddy, S., & O'Donnell, G. M. (2014). Teaching students with autism spectrum disorder in mainstream post-primary schools in the Republic of Ireland. *International Journal of Inclusive Education, 18*(4), 323-344.

Meade, D. L. (2011). *Teacher and parent perspectives on proactive parental involvement with students with autism.* US: ProQuest Dissertations Publishing.

O'Dell, L., Bertilsdotter Rosqvist, H., Ortega, F., Brownlow, C., & Orsini, M. (2016). Critical autism studies: exploring epistemic dialogues and intersections, challenging dominant understandings of autism. *Disability & Society, 31*(2), 166-179.

OECD. (2018). *TALIS 2018 Results (Volume I): Teachers and school leaders as lifelong learners.* Paris: TALIS, OECD Publishing. Retrieved from https://doi.org/10.1787/1d0bc92a-en

Partington, J. W., & Mueller, M. M. (2013). *The assessment of functional living skills: School skills assessment protocol.* San Francisco: Behavior Analysis, Inc. and Stimulus Publications.

Patton, M. Q. (1980). *Qualitative evaluation methods.* Beverly Hills, CA.: Sage.

Peterson, J. M., & Hittie, M. M. (2010). *Inclusive teaching: The journey towards effective schools for all learners* (2nd ed.). Thousand Oaks, CA: Pearson Education, Inc.

Raising Children. (2020). *Social skills and autism spectrum disorder*. Retrieved from https://raisingchildren.net.au/autism/communicating-relationships/connecting/social-skills-for-children-with-asd

Robertson, K., Chamberlain, B., & Kasari, C. (2003). General education teachers' relationships with included students with autism. *Journal of Autism and developmental disorders, 33*(2), 123-130.

Rotheram-Fuller, E., Kasari, C., Chamberlain, B., & Locke, J. (2010). Social involvement of children with autism spectrum disorders in elementary school classrooms. *Journal of Child Psychology and Psychiatry, 51*(11), 1227-1234.

Sarason, I. G., Levine, H. M., Basham, R. B., & Sarason, B. R. (1983). Assessing social support: The social support questionnaire. *Journal of Personality and Social Psychology, 44*(1), 127.

Scruggs, T. E., & Mastropieri, M. A. (1996). Teacher perceptions of mainstreaming/inclusion, 1958–1995: A research synthesis. *Exceptional Children, 63*(1), 59-74.

Soto-Chodiman, R., Pooley, J., Cohen, L., & Taylor, M. (2012). Students with ASD in mainstream primary education settings: Teachers' experiences in western Australian classrooms. *Australasian Journal of Special Education, 36*(2), 97-111.

Sternberg, R. J., & Horvath, J. A. (1999). *Tacit knowledge in professional practice: Researcher and practitioner perspectives.* Mahwah, NJ: Lawrence Erlbaum Associates Publishers.

Syriopoulou-Delli, C. K., Cassimos, D. C., Tripsianis, G. I., & Polychronopoulou, S. A. (2012). Teachers' perceptions regarding the management of children with autism spectrum disorders. *Journal of Autism and Developmental Disorders, 42*(5), 755-768.

Tanner, K., Dixon, R. M., & Verenikina, I. (2010). The digital technology in the learning of students with autism spectrum disorders (ASD) in applied classroom settings. In J. Herrington & B. Hunter (Eds.), *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2010* (pp. 2586-2591). Chesapeake, VA: AACE.

Vakil, S., Welton, E., O'Connor, B., & Kline, L. S. (2009). Inclusion means everyone! The role of the early childhood educator when including young children with autism in the classroom. *Early Childhood Education Journal, 36*(4), 321–326.

Vismara, L. A., & Rogers, S. J. (2008). The early start Denver model: A case study of an innovative practice. *Journal of Early Intervention, 31*(1), 91-108.

Whitebread, K. M., & Bruder, M. B. (2007). Collaboration in special education: Parent Professional training. *Teaching Exceptional Children, 39*(4), 6-14.

Zeichner, K. M., & Liston, D. P. (2013). *Reflective teaching: An introduction.* NY: Routledge.

IOJPE

ISSN: 1300 – 915X
www.iojpe.org

International Online Journal of Primary Education *2020, volume 9, issue 1*

HOW READY ARE FAMILIES TO THE EDUCATION SYSTEM WAITING FOR US IN THE FUTURE?

Halil KAMIŞLI
Dr., Final International University, Faculty of Education, Northern Cyprus TR-10 Mersin, Turkey
ORCID: https://orcid.org/0000-0001-6715-431X
halil.kamisli@final.edu.tr

Received: 04-03-2020 **Accepted:** 01-06-2020 **Published:** 30-06-2020

Abstract

The importance of the family factor in the process of providing the child with literacy skills has been demonstrated by many studies. From this point of view, family literacy level emerges as an important factor in developing the literacy skills desired to be given to the child. This importance has increased even more due to the Corona (COVIT-19) virus pandemic, which is experienced all over the world. Because of the fact that educational institutions, including primary education level, have switched to distance education, the time period spent by students with families has increased. According to education experts education system will not be the same after the pandemic. If distance education is made permanent, how ready are families? It is important to take steps towards determining this situation and eliminating possible deficiencies. In addition to the duties of educators and those responsible for education to solve the current problems, there are also preparatory tasks for the expected educational models in the future. If these tendencies are not done correctly and preventions are not taken, great problems may arise in terms of education. In this study, the aim is to determine the family literacy levels of the students' parents who are enrolled in the primary school 1st grade level and to determine how ready they are for this process. This study was designed as a survey model that aims to evaluate family literacy skills in terms of various variables. The study group of the research consists of 460 parents who have children enrolled in the primary education institutions of the first year in the 2019-2020 academic years. Family Literacy Scale was used as data collection tool. In data analysis process, the t-test and ANOVA tests were used. In line with the research, the family literacy levels of the participants were found to be medium.

Keywords: Family literacy, distance education, early childhood, corona.

INTRODUCTION

Early childhood, which begins with the birth of the individual and continues until the age of 8, is one of the critical periods in development (Bredekamp, 2015; Copple & Bredekamp, 2009). Experiences in this period make great contributions to the development of the individual. Significant foundations of social, emotional, psychomotor and language skills acquired during adulthood are laid in this period (Bredekamp, 2015). The studies carried out in this field date back to Plato and Aristotle. After 1900, important information about early childhood was obtained through observational studies of theorists such as Dewey, Piaget, Vygotsky, who are prominent in the field. Literacy skill is one of the skills to be developedthis period, and the knowledge and experiences gained during this period lay the groundwork for being a good literate (Altınkaynak & Akman, 2016).

Literacy Skills in Early Childhood

Literacy (UNESCO, 2004), which is defined as the ability to read and write, containing a set of skills and knowledge, by understanding a simple statement about one's daily life, is a process that begins with the birth of the individual (Kahraman, 2013). Children who interact with their environment from birth gain much of their literacy experience before starting school (Cunningham & Moore, 1995). The child's experiences about literacy before starting school are explained in the literature with the concept of “emergent literacy”. Emergent literacy is defined as “progressive development of literacy skills in preschool period with the effect of printed reading aids in the child's family and social environment”. At the beginning of this process the child cannot distinguish between the surrounding items. All objects around the child have the same meaning for him. After end of this process, the child begins to recognize the literacy documents. In the second stage children begin to imitate adults in reading and writing. They pretend to read the written documents by imitating adults. In the following days, children start to discover some rules of reading by observing adult family members reading books and newspapers. In this process, children start to develop pseudo reading by discovering that the eye is

moving from right to left and from top to bottom while reading and the pages of books and newspapers are turned from left to right during the natural observation process. In the following days, children start to establish a relationship between the language of speech and written language by observing the family members while they are reading. Thus, they begin to discover that what has been written can be said and what has been said can also be written. In the last stage the parents support the child consciously for reading and they do reading studies together (Cunningham et all., 1995; Roe, Smith &Burns, 2011).

The Importance of Family in Literacy Skills

As seen in the emergent literacy development stages, the child's interest in reading and writing and the first literacy experiences begin in the family (Turan & Akoğlu, 2014; Connor & Craig, 2006). The literacy journey that starts in the home environment where the individual was born in to continues throughout his/her life by being affected by the developmental factors of the child and by the environment in which s/he is located. It is stated that children growing up in environments equipped with rich literacy stimulants in the preschool period have successfully transitioned from the early literacy process to the traditional literacy process (Justice and Ezell, 2004). Additionally, in the studies carried out in this field, the importance of family was emphasized in the process of gaining the child's literacy skills. This supports that what child receives from his family has an impact on his future school success. Many studies have also shown that reading books to children (Justice, 2006; Powell, Diamond, Burchinal & Koehler, 2010; Sim & Berthelsen, 2014) and reading together from an early age (Güneş, 2018; Niklas & Schneider, 2015; Hindman, Skibbe, & Foster, 2014) have positive effects on children's language and developing literacy skills (Çoşkun & Deniz, 2019; Picq et al., 2014). Indeed, the child is affected in the environment in which he lives from the moment s/he was born, and that the socioeconomic and cultural environment is closely related to his readiness to read was proven (Temel, Aksoy & Kurtulmuş, 2015; Oktay, 2010).

In the aforementioned studies, the importance of the family in early childhood is emphasized and it was mentioned as an important factor in school success. In other words, family prepares the child for school life. In school life, teachers are responsible for developing the lack of pre-skills that students bring from home, and there is a chance for the deficiencies in the family environment to be corrected at school for the skills that should be gained in early childhood. While the family is solely responsible for education until the child starts school, it shares this responsibility with the educational institutions when child starts school. In summary, family and educational institutions share the educational responsibility of the child who is in school. However, the phenomenon of ‘shared responsibility’ between family and school may be different in some situations such as "homeschooling". The primary responsibility in the “homeschooling education” practice is on family (Barratt-Peacock, 2003; Harding & Farrell, 2003) and the "homeschooling" has become more common in countries such as Canada, England, Germany, Israel, Belgium, France and Denmark recently (Kunzman & Gaither 2013; Neuman & Guterman 2013; Ray 2011; Blok & Karsten 2011; Basham, Merrifield & Hepburn, 2007; Cooper & Sureau, 2007; Green & Hoover-Dempsey, 2007; Collom, 2005). In order to better understand the concept of homeschooling, some definitions are given below.

Homeschooling

Waggoner (2005) defines the concept of homeschooling as “a method of education that has been used by parents for hundreds of years to train children at home for the transfer of traditional values and characteristics that keep the family institution to the next generations”. According to the USA official records, homeschooling practice is defined as “educating school-age children at home instead of school” (Basham et al., 2007). Petrie (1995) defines homeschooling as “educating children in their own homes by their parents or private teachers who they hire”.

In numerous academic studies, the reasons for choosing the home education system of the families were investigated. Poor learning conditions, bad climate in schools, and lack of safety are the most obvious reasons for homeschooling (Guterman & Neuman 2017; Redford, Battle, & Bielick 2016; Neuman & Aviram, 2015; Anthony & Burroughs, 2010; Green & Hoover-Dempsey, 2007).

"Homeschooling" that is a common practice in various countries is not a very common practice in Turkey. However, when considering the reasons of these countries' practices, it may be said for future there is a potential in Turkey. As stated in the current study, supported by academic studies, family is an important factor in child's literacy skills, even if they continue their education in school. Considering "homeschooling" application, the importance of parents' literacy is even more important in cases where child's education takes place at home. This effect of the family on the child's literacy skills has taken place in the literature as the concept of family literacy.

What is Family Literacy?

The term "family literacy" was described by Denny Taylor (1983) as a process where family members learn together how to become literate, increase literacy. Ontario Literacy Coalition (2010) defines family literacy as;

> The development and use of literacy skills in a family's daily life, including how families use literacy in their everyday tasks; help their children develop literacy skills; get involved in their children's education; and use literacy to maintain relationships with each other and with their communities (cited in McCarty, 2017).

The concept of family literacy that is used in the early years was a broad concept that included the subjects needed for families to be healthier, more cultured and happier, such as budget, health, cleaning and care, language learning, child psychology, and communication. In later years, the concept of family literacy became a concept that includes family-child literacy and read-write activities. Family literacy includes families' own literacy experiences and studies that will help their children's reading and writing experiences (Power, 1992). As can be understood from the definitions, family literacy refers to the set of activities of preparing children for the literacy process and supporting the development of their skills in this process by their family.

The importance of the family factor in the process of providing the child with literacy skills has been demonstrated by many studies (Hindman, Skibbe, & Foster, 2014; Sim & Berthelsen, 2014). From this point of view, family literacy level emerges as an important factor in developing the literacy skills desired to be given to the child. This importance has increased even more due to the Corona (COVIT-19) virus pandemic, which is experienced all over the world. Because all educational institutions, including primary education level, have switched to distance education and the time period spent by students with families has increased. In this period, distance education was chosen as a popular choice to meet educational needs (Özonur, Yanpar-Yelken & Sancar-Tokmak, 2018). Education experts have expressed that education will not be the same after the pandemic. If distance education process is made permanent, how much are the families ready for it? It is important to take steps towards determining this situation and eliminating possible deficiencies. In addition to the duties of educators and those responsible for education to solve the current problems, there are also preparatory tasks for the expected educational models in the future. If these tendencies are not done correctly and preventions are not taken on time, great problems may arise in terms of education. Accordingly, within the scope of the present study, it was aimed to determine the family literacy levels of the students' parents who are enrolled in the primary school 1st grade level and to determine how ready they are for this process. The main research problem of this research was "What are the literacy levels of families and how do gender, income, employment and education levels affect this level?"

METHOD

Research Model

This study was designed as a survey model that aims to evaluate family literacy skills in terms of various variables.

Participants

The study group of the research consists of 460 parents who have children enrolled in the primary education institutions of the first year in the 2019-2020 academic years. The characteristics of the working group are given in Table 1 below.

Table 1. Descriptive statistics about working group characteristics

Characteristics	F	%
Gender		
Woman	231	50.22
Man	229	49.78
Total	460	100.0
Employment status		
Yes	235	51.08
No	225	48.91
Total	460	100.0
Education status		
Primary school	153	33.26
High school	152	33.04
University graduate	155	33.69
Total	460	100.0
Income status		
Lower (500 $ or less)	156	33.91
Medium (501 $ and 7000 $)	153	33.26
Upper (7001 $ and above)	151	32.82
Total	460	100.0

Data Collection Tool

In the research, Family Literacy Scale developed by Kılıç, Doğan and Özden (2017) was used. The 5-point Likert-type scale consists of 32 items, while the lowest score that can be obtained from the scale is 32, while the highest score is 160. The explanatory factor analysis results showed that the scale is composed of three factors: parental literacy (16), child literacy (12), and early literacy (4). The reliability coefficient for the scale was found to be α = .89. Within the scope of this study, the reliability coefficient of the scale was found to be .87.

Data Analysis

In the data analysis process, as the first step, the measures of central tendency were examined to determine whether the obtained data d a normal distribution. It was determined that the mean, mode and median values of the variables were close to each other, and the skewness and kurtosis coefficients (-.527 and -.989) were within the normal distribution range. The skewness and kurtosis coefficients between +1 and -1 are a positive indicator for normal distribution. The normality test for literacy scores is given in Table 2.

Table 2. Normality test for literacy scores

	Kolmogorov Smirnov			Shapiro-Wilk		
	Test statistics	df	P	Test statistics	df	P
Literacy Level	.371	460	.120	.769	460	.099

*p<.05

When we look at Table 2, it is seen that the scores of literacy levels obtained within the scope of the research showed a normal distribution (Kolmogorov Smirnov (p = .121) and Shapiro-Wilk (p = .099).

After the determination of the normal distribution, it was decided to use the t-test, ANOVA tests and post-hoc, which are among the parametric tests to compare two and more independent groups.

RESULTS

In this section, the findings of the research are tabulated. Table 3 shows the mean scores of the literacy levels of the study group.

Table 3. Descriptive statistics regarding the average of literacy level

	n	Min.	Mean	Max.	Std.Dev.
FLL	460	55.35	87.06	142.03	18.28

FLL: Family Literacy Level

The average score of the participants regarding the literacy level was found to be Mean = 87.06 considering that the maximum score that can be obtained from the scale is 160, it can be said that the scores obtained are at a medium level. The t-test results related to the differentiation of literacy levels by gender are given in Table 4.

Table 4. T-test results regarding gender

Grup	n	Mean	Std.Dev.	t	P
Woman	231	101.28	13.22	3.31	.000*
Man	229	72.842	12.03		

*p < .001

As seen in Table 4, the scale scores of the participants' literacy levels differ according to gender (p = .000). This differentiation shows that the literacy levels of female participants are significantly higher than the male participants. The t-test results related to the differentiation status of literacy levels according to the employment status are given in Table 5.

Table 5. T-test results regarding employment status

Grup	n	Mean	Std.Dev.	t	p
Employed	235	76.13	12.42	2.75	.000*
Unemployed	225	97.99	12.98		

*p < .001

The scale scores of the participants' literacy levels differ according to their employment status (p = .000). This differentiation shows that the literacy levels of the unemployed participants are significantly higher than the employed participants. ANOVA results regarding the differentiation levels of literacy levels according to the education level are given in Table 6.

Table 6. ANOVA results for educational situations

	Sum of Squares	df	Mean Square	F	Sig.	Post-hoc Dif.
Between groups	48912.122	2	24456.061	112.044	.000*	2-1
Within groups	98877.107	458	215.888			
Total	147789.229	460				2-3

*p < .001

The scale scores of the participants' literacy levels differ according to their educational status (p = .000). Post-hoc test was carried out to determine from which variables this differentiation was originated. It was determined that the secondary school graduate participants (2) ($\bar{x}$=105.4 ± 13.61) had significantly higher literacy levels than primary (1) ($\bar{x}$=77.74 ± 12.45) and university graduates (3) ($\bar{x}$=78.04 ± 12.51). ANOVA results regarding the differentiation status of literacy levels according to income status are given in Table 7.

Table 7. ANOVA results for income situations

	Sum of Squares	df	Mean Square	F	Sig.	Post-hoc Dif.
Between groups	47872.821	2	23936.411	113.754	.000	2-1
Within groups	95321.446	458	208.125			
Total	143194.267	460				2-3

*p < .001

The scale scores of the participants' literacy levels differ according to their income status (p = 0.00). Post-hoc test was carried out to determine from which variables this differentiation was originated. It was determined that the participants with medium income (2) ($\bar{x}$=103.4 ± 13.42) had significantly higher literacy levels than those with low (1) ($\bar{x}$=78.73 ± 12.59) and high income (3) ($\bar{x}$=79.05 ± 12.77).

DISCUSSION and CONCLUSIONS

The results obtained within are discussed within the scope of the families' level of readiness for future education models (distance, home education, etc.) and the factors affecting these preparation levels.

Families' Level of Readiness for Future Education Models

The family literacy levels of the participants were found to be medium in this research. Considering the new educational models that may occur in the future, family factor and its contribution will be more valuable in the development of children's literacy skills. In this period, when the task for families increases, the level of family literacy may not be sufficient in order to carry out the process properly. This is due to the fact that it has been demonstrated with the studies that family support in developing literacy skills in early childhood has great contributions in the development of these skills in children. Reading, writing and language activities organized by families in home environment contribute to the development of children's stronger literacy and language skills (Coşkun & Deniz, 2019; Picq et al., 2014; Weigel & Martin, 2007).

The fact that the persons responsible for education carry out studies to increase the literacy levels of the families will contribute to the improvement of the situation achieved within the scope of the current study. This idea was supported in studies in this field, family literacy programs were developed and their effects were investigated (Wilson, 2017; Morrow, 2015; Niklas & Schneider, 2015; Wasik & Van Horn, 2012; Barratt-Pugh & Allen, 2011). These programs were aimed at helping parents to support their children's literacy skills. It was concluded that the family literacy programs put into practice are very effective and positively affect the child's literacy skills and intra-family communication (Al-Maadadi1, Ihmeideh, Al-Falasi, Coughlin & Al-Thani, 2017). There are family education programs in Turkey and the effect of these education programs on literacy skills and attitudes of children was investigated (Çoşkun & Deniz, 2019; Kılıç, 2018; Altınkaynak & Akman, 2016). The increase in the number of these kinds of programs is considered necessary for families in Turkey to be able to contribute to the education of their children. Steps should be taken before it is late since the problems will grow in the future.

Factors Affecting Family Literacy Level

As a result of the research, it was concluded that the literacy levels of female participants are higher than the male participants. This result is thought to stem from the family structure. While men dealt with hunting and gathering in nomadic societies, women were responsible for housework and child education. With the developing societies, women have started to work, but their responsibility for the development and education of children has not changed. In summary, the fact that mothers were primarily responsible for the education and development of the child affected the result obtained. There are not only similar situations in Turkey but also in the world. Studies have shown that mothers have more effects on child education (Nixon, 2012; Goodman & Gregg, 2010; Saracaloğlu, Bozkurt, Serin, 2003). In addition, it was revealed in studies that the majority of the participants in family literacy education are women (McCharty, 2017).

It was determined that the literacy levels of the unemployed participants were higher than that of the employed. In addition, the literacy levels of secondary school graduates are higher than primary and university graduates. Literacy levels of middle income participants are higher than low and high income participants. It is an expected result that the non-working participants have higher literacy levels than the working participants. Because parents at home have a chance to spend more time with their children and are more interested in their education.

The secondary school graduates' higher level of literacy compared to primary and university graduates is seen as an unexpected result. In addition, the middle-income participants' higher level of literacy compared to the low- and high-income participants is another unexpected result. When the scale used within the scope of the research is taken into consideration, the criterion that the items are measuring is the time parents spend to contributing their children's literacy skills. It is estimated that high-income families share the education responsibility of their children with both private schools and private teachers that reduce the time they allocate to this process. Likewise, the time higher education graduate families allocate to their families is shorter because they mostly work. This situation is thought to be the reason for the result obtained in this research. It is thought that low income and primary school graduate families are the other reasons of this result due to their livelihood anxiety and their inability to support their children academically. It is possible to overcome these deficiencies through family education programs (Burgoyne, Gardner, Whiteley, Snowling, & Hulme, 2018; Doyle & Zhang, 2011).

Within the scope of this research, family literacy levels, which have a positive effect on children's literacy skills, have been investigated. Due to the pandemic that the whole world has experienced, education has been adapted and responsibility of families for the education of their children has increased. After the pandemic, it becomes important to determine if and how families are ready for this process if the current education system is permanent. This factor makes the current study important. Literacy levels of the families participating in the study were found to be medium.

It is concluded that families need training in order to contribute to their adaptation of the education system to be established in the future. Thanks to these trainings, families will be able to spend more quality time with their children and will contribute positively to their literacy skills. In the studies carried out in this field, the accuracy of this argument has been demonstrated (Lonigan & Gibson, 2018; Parpucu & Dinç, 2017; Bayraktar & Temel, 2014; Yazıcı & Kandır, 2014; Peterson, 2012; Puranik, Phillips, Martini & Senechal, 2012; Eva, Lau & Nirmala, 2011; Schmit, Simpson & Friend, 2011). There will always be families working and not spending too much time with their child. It is possible to find a solution of this problem by training the responsible persons of education of children about the family literacy education.

REFERENCES

Al-Maadadil, F., Ihmeideh, F., Al-Falasi, M., Coughlin, C., & Al-Thani, T. (2017). Family literacy programs in Qatar: Teachers' and parents' perceptions and practices. *Journal of Educational and Developmental Psychology, 7*(1), 283-296

Altınkaynak, Ş. Ö, & Akman, B. (2016). The effects of family-based literacy preparation program on children's literacy preparation skills. *Education and Science, 41*(186), 185-204.

Anthony, K. V., & Burroughs, S. (2010). Making the transition from traditional to home schooling: Home school family motivations. *Current Issues in Education, 13*(4), 1-33.

Barratt-Peacock, J. (2003). Australian home education: A model. *Evaluation and Research in Education. 17*(3), 101-111.

Barratt-Pugh, C., & Allen, N. (2011). Making a difference: Findings from Better Beginnings a family literacy intervention programme. *The Australian Library Journal, 60*(3), 195-204.

Basham, P., Merrifield, J., & Hepburn, C. R. (2007). *Home schooling: From the extreme to the mainstream*. 2nd Edition. Studies in Education Policy, pp. 1-24.

Bayraktar, V., & Temel, F. (2014). The effect of the program of readiness education on the skills on reading-writing skills. *Hacettepe University Journal of Education, 29*(3), 08-22.

Blok, H., & Karsten, S. (2011). Inspection of home education in European Countries. *European Journal of Education, 40*(1), 138-152.

Bredekamp, S. (2015). *Erken çocukluk eğitiminde etkili uygulamalar* [Effective practices in early childhood education]. (2nd Edition). Trans. H. Z. İnan and T. İnan, p.343-345. Ankara: Nobel Publishing.

Burgoyne, K., Gardner, R., Whiteley, H., Snowling, M. J., & Hulme, C. (2018). Evaluation of a parent-delivered early language enrichment programme: Evidence from a randomised controlled trial. *The Journal of Child Psychology and Psychiatry*, *59*(5), 545-555.

Collom, E. (2005). The ins and outs of homeschooling: The determinants of parental motivations and student achievement. *Education and Urban Society*, *37*(3), 307-335.

Connor, C. M. D., & Craig, H. K. (2006). African American preschoolers' language, emergent literacy skills, and use of African American English: A complex relation. *Journal of Speech, Language, and Hearing Research*, *49*(4), 771-792.

Cooper, B. S., & Surreau, J. (2007). The politics of homeschooling: New developments, new challenges. *Education Policy, 21*, 110-131.

Copple, C., & Bredekamp, S. (Eds.) (2009). *Developmentally appropriate practice in early childhood programs serving children from birth through age 8 (3rd ed.).* Washington, DC: National Association for Education of Young Children.

Cunningham, P. M., Moore, S. A., Cunningham, J. W., & Moore, D. W. (1995). *Reading and writing in elementary classrooms*. Longman Publishers, USA.

Çoşkun, L., & Deniz, Ü. (2019). Determining the effects of home-based educational activities on pre-literacy skills of 48-60 month olds. *Journal of Gazi Educational Faculty, 39*(2), 873-893

Dexter, C., & Stacks, A. M. (2014). A preliminary investigation of the relationship between parenting, parent-child shared reading practices, and child development in low-income families. *Journal of Research in Childhood Education, 28*(3), 394-410.

Doyle, A., & Zhang, J. (2011). Participation structure impacts on parent engagement in family literacy programs. *Early Childhood Education Journal, 39*(3), 223-233

Eva, Y. H., Lau, H. L., & Nirmala, R. (2011). Parental involvement and children's readiness for school in China. *Educational Research*, *53*(1), 95-113.

Green, C. L., & Hoover-Dempsey, K. V. (2007). Why do parents homeschool? A systematic examination of parental involvement. *Education & Urban Society, 39*, 264-285.

Güneş, G. (2018). *Examination the contributions of pedagogical documentation on family involvement in early childhood education.* Unpublished Master Thesis, Hacettepe University, Ankara.

Goodman, A., & Gregg P. (2010). *Poorer children's educational attainment: How important are attitudes and behaviour?* York: Joseph Rowntree Foundation.

Neuman, A., & Guterman, O. (2017). What are we educating towards? Socialization, acculturation, and individualization as reflected in home education. *Educational Studies 43*(3), 265–281.

Harding, T., & Farrell, A. (2003). Home schooling and legislated education Australia and New Zealand. *Journal of Law and Education, 8*, 125-133.

Hindman, A. H., Skibbe, L. E., & Foster, T. D. (2014). Exploring the variety of parental talk during shared book reading and its contributions to preschool language and literacy: Evidence from the early childhood longitudinal study-birth cohort, *Read Write*. 27, 287–313.

Justice, L. (2006). *Clinical approaches to emergent literacy intervention.* San Diego, CA: Plural Publishing.

Justice, L. M., & Ezell, H. K. (2004). Print referencing: An emergent literacy enhancement strategy and its clinical applications. *Language, Speech, and Hearing Services in Schools*, 35, 185-193.

Karaman, G. (2013). *Erken okuryazarlık becerilerini değerlendirme aracının geliştirilmesi, geçerlik ve güvenirlik çalışması* [Development of early literacy skills assessment tool, validity and reliability study]. Unpublished Doctorate Thesis, Gazi University, Ankara.

Kılıç, F. (2018). *İlkokul 1. sınıf velilerine yönelik bir aile okuryazarlığı programı geliştirme çalışması* [A family literacy curriculum development study for the primary school 1st grade parents]. Unpublished Doctorate Thesis, Educational Science Institute, Marmara Üniversity, İstanbul.

Kılıç, F., Doğan, M. C., & Özden, B. (2017). Family literacy scale the study of validity and reliability. *HAYEF: Journal of Education, 14* (2), 203–219.

Kunzman, R., & Gaither, M. (2013). Homeschooling: A comprehensive survey of the research. *Other Education: The Journal of Educational Alternatives, 2* (1), 4-59.

Martini, F., & Senechal, M. (2012). Learning literacy skills at home: Parent teaching, expectations, and child interest. *Canadian Journal of Behavioural Science, 44* (3), 210-221.

McCarthy, L. (2017). *Family Literacy: Developing a framework for practice*. Doctoral dissertation, Waterford Institute of Technology.

Morrow, L. M. (2015). *Literacy development in the early years: Helping children read and write*. Boston, MA: Pearson.

Neuman, A., & O. Guterman. (2013). *Home schooling-the ultimate form of parental involvement in their children's education.* Paper presented at the 1st International Conference on Family, Education and Media in a Diverse Society, Jerusalem, Israel.

Neuman, A., & Aviram, R. (2015). *Home Schooling: The choice and the consequences.* P. Rothermel (Ed.), International Perspectives on Home Education. Do We Still Need Schools?, Palgrave Macmillan, Basingstoke.

Niklas, F., & Schneider, W. (2015). With a little help: Improving kindergarten children's vocabulary by enhancing the home literacy environment. *Reading and Writing, 28*(4), 491-508.

Nixon, E. (2012). *Growing up in Ireland: national longitudinal study of children-how families matter for social and emotional outcomes of 9-year-old children: Executive summary*. Irish: Government Publications.

Oktay, A. (2010). *Okulöncesi eğitim ve ilköğretimin çocuğun yaşamındaki yeri ve önemi*. A. Oktay (Ed.). İlköğretime hazırlık ve ilköğretim programları. (1.bs.). Ankara: Pegem A Publishing.

Ozonur, M., Yanpar-Yelken, T., & Sancar-Tokmak, H. (2018). Social presence and motivation in online environments: Second life versus the enocta learning management system/adobe connect. *Ajet, 34*(3), 1-14.

Parpucu, N., & Dinç, B. (2017). The effects of colorful worlds of sounds program on phonological awareness of preschool children. *Education and Science, 42*(192), 233-261.

Peterson, S. S. (2012). Preschool early literacy programs in Ontario public libraries. *The Canadian Journal of Library and Information Practice and Research, 7*(2), 1-21.

Petrie, A. J. (1995). Home educators and the law within Europe. *International Review of Education, 41*(3-4), 285-296.

Picq, P, Sagart, L., Dehaene, G., & Lestienne, C. (2014). *Dilin en güzel tarihi*. (Trans. S. Rifat), İstanbul: Türkiye İş Bankası Kültür Publications.

Phillips, Lonigan & Puranik, C., Philips, B. M., Lonigan, C. J., & Gibson, E. (2018). Home literacy practices and preschool children's emergent writing skills: An initial investigation. *Early Childhood Research Quarterly, 42*, 228-238.

Pile, E. J. S., Girolametto, L., Johnson, C. J., Chen, X., & Cleave, P. J. (2010). Shared book reading intervention for children with language impairment: Using parents-as-aides in language intervention. *Canadian Journal of Speech-Language Pathology and Audiology, 34*, 96-109.

Powell, D. R., Diamond, K. E., Burchinal, M. R., & Koehler, M. J. (2010). Effects of an early literacy professional development intervention on head start teachers and children. *Journal of Educational Psychology, 102*(2), 299-312

Power, J. (1992). *Parent-teacher partnership in early literacy learning: The benefits for teachers*. Paper presented in AARE, Australia Puranik.

Puranik, C. S., Phillips, B. M. Lonigan, C. J., & Gibson, E. (2018). Home literacy practices and preschool children's emergent writing skills: An inital investigation. *Early Childhood Resh Quarterly, 40*(1), 228-238.

Ray, B. (2011). 2.*04 million homeschool students in the united states in 2010*. OR: National Home Education Research Institute.

Redford, J., Battle, D., & Bielick, S. (2017). *Homeschooling in the United States: 2012*. Washington, DC: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education.

Roe, B., Smith, S.H. & Burns, P. C. (2011). *Teaching reading in today's elementary schools*. (What's New in Education) 11th Edition, Boston: Houghton Mifflin Company.

Saracaloğlu A. S., Bozkurt, N., & Serin, O. (2003). Üniversite öğrencilerinin okuma ilgileri ve okuma alışkanlıklarını etkileyen faktörler [Factors that affect university students' reading interests and habits]. *Eurasian Journal of Educational Research*, *8*(4), 149-157.

Schmitt, S. A., Simpson, A. M., & Friend, M. (2011). A longitudinal assessment of the home literacy environment and early language. *Infant and Child Development*, *20*, 409-431.

Sim, P., & Berthelsen, D. (2014). Shared book reading by parents with young children: Evidence based practice. *Australasian Journal of Early Childhood*, *39*(1) 50-55.

Taylor, D. (1983). *Family literacy: Young children learning to read and write*. Taylor, Denny Heinemann Educational Books Inc., 70 Court St., Portsmouth.

Temel, Z. F., Aksoy, A., & Kurtulmuş, Z. (2015). *Aile görüşmeleri*. In F. Temel (Ed.), Aile eğitimi ve erken çocukluk eğitiminde aile katılım çalışmaları (p.328-360). Ankara: Anı Publishing..

Turan, F., & Akoğlu, G. (2014). Home literacy environment and phonological awareness skills in preschool children. *Hacettepe University Journal of Education*, *29*(3), 153-166.

Waggoner, C. (2005). A hybrid way of learning: Taught at home and taught at school. *The Rural Educator*, *26*(3), 31-34.

Wasik, B. H., & Van Horn, B. (2012). *The role of family literacy in society*. In B. H. Wasik (Ed.), Handbook of Family Literacy (2nd ed.) (3-17). New York, NY: Routledge.

Weigel, D. J., Lowman, J. L., & Martin, S. S. (2007). Language development in the years before school: A comparison of developmental assets in home and child care settings. *Early Development and Care*, *177*(6-7), 719-734.

Wilson, D. R. (2017). Family literacy packs: Preservice teachers' experiences with family-school connections. Reading Improvement, *54*(4), 150-153

Yazıcı, E., & Kandır, A. (2014). The effect of sensory education program supporting the reading - writing skills on the reading - writing skills of children at the age of 61-66 months. *The Journal of International Social Research*, *7*(33), 686-701.

IOJPE

ISSN: 1300 – 915X
www.iojpe.org

International Online Journal of Primary Education *2020, volume 9, issue 1*

THE EFFECT OF CREATIVE DRAMA ON SOME VARIABLES RELATED WITH SPEAKING[1]

Ali TÜRKEL
Assist. Prof. Dr., Dokuz Eylül University, Buca Faculty of Education, İzmir, Turkey
ORCID: https://orcid.org/0000-0003-4743-8766
ali.turkel@hotmail.com

Koray ÖZ
Dokuz Eylül University, Buca Faculty of Education, İzmir, Turkey
ORCID: https://orcid.org/0000-0002-5530-5501
korayoz@windowslive.com

Received: 05-02-2020 **Accepted:** 06-06-2020 **Published:** 30-06-2020

Abstract

Speaking is one of the four basic skills, which mother tongue teaching is expected to build up. The enhancement[2]of their speaking skills is important for the mother tongue teacher candidates, who are expected to enhance this skill. In this study this has been the starting point; the effect of drama method on verbal expression class, which was attended by mother tongue teacher candidates, was inquired. Mother tongue teacher candidates' perception of their self-sufficiency in speaking and their attitude towards speaking have constituted the fundamental point of the research in order to identify the effect of creative drama method on the skill of verbal expression. Mixed method, in which is a combination of quantitative and qualitative methods, was used for the research. Explanatory sequential pattern was used in the research in order to bring an explanation to quantitative results. The study group of the research consisted of 90 students, who attended 1st Grade Verbal Expression class of Turkish Language Teaching Department of Dokuz Eylül University, Buca Faculty of Education, at the spring term of 2017-2018 academic year. Experimental and control groups had 45 students each. Attitude scale towards speaking and self-sufficiency were applied to students of both groups at the quantitative dimension of the research, both pre and post implementation. The covariance analysis (ANCOVA) was carried out in order to enable the analysis of differences between the groups via statistical methods, as per dependant variations. Arithmetic average, standard deviation and percent values were included as descriptive statistics. Semi-structured interview form was used for the qualitative aspect of the research. Acquired data was resolved via content analysis. As per the comparative analysis of quantitative findings, it was seen that there was a significant difference in favor of the experimental group with regards to their attitude toward verbal expression and their perception of self-sufficiency in speaking. Quantitative findings were supportive of the qualitative ones. Teacher candidates made statements that their perceptions of self-sufficiency in speaking and their attitudes toward speaking were enhanced in drama-based classes.

Keywords: Speaking skill, attitude, perception of self-sufficiency, motions and thoughts

INTRODUCTION

Speaking is one of the four fundamental language skills and is required to be improved via mother tongue teaching. Sever (2000) states that mother tongue teaching has aims of making individuals; gain such linguistic skills that they can realize a solid, clear and effective communication; enhance their intellectual capacity and contribute to their processes of maturation and socialization. Türkel (2013) specifies that the fundamental aim of mother tongue teaching is the development of four basic language skills (speaking, writing, reading and listening) of students; points out that the above mentioned skills have a significant effect on the socialization of the individual and emphasizes that there is a strong relation between a higher level of intellectual ability and language teaching.

As for Katrancı (2014); speaking is the transmission of acquired knowledge and concepts that people created in their minds and their expression via sounds, following an evaluation that is carried out in their brains. Aktaş and Gündüz (2002) points out how the process of speaking functions. In this functioning, during the process of speaking, which has physical and mental qualifications; firstly the

[1] This study was developed from the post-graduate thesis of Mr.Koray Öz, named "Opinions of Turkish Language Teacher Candidates Regarding Drama Based Verbal Expression Classes"

data in the mind is revised; the purpose and the limitations as regards to that purpose are determined and eventually the emotion and thought that are desired to be expressed is made ready in the mind. Finally, these emotions and thoughts are vocalized via our organs that enable us to speak.

Speaking, which is one of the four skills that mother tongue teaching is expected to develop, has a significant role in communication and learning. Temizyürek and Temizkan (2011) states that speaking is very significant for the individual to express himself to others and adds that, the enhancement of use of language, which is the basic communication element of the individual and ensuring that the individual can build a healthy communication within the society are among the basic objectives of Turkish language teaching. He also emphasizes that speaking skill is the starting point of important implementations such as reading and writing. He states that the speaking skill has a vital importance in both personal and social aspects.

It is frequently emphasized in the related literature that individuals with immature speaking skills experience or would experience communication problems. Adalı (2009) emphasizes the effect of speaking on the psychology, development of personality and hence socialization of the individual. As for Adalı (2009) people, who cannot transmit their emotions and thoughts to others in a healthy way, feel insufficient and begin to build less communication after a certain time. Hence, this may cause isolation of people inside the society and lose their self-confidence.

Yaman and Karaaslan (2012) states that the speaking skill, which is the foundation of mother tongue education, cannot be developed sufficiently in our country and desired results cannot be attained. As opposed to the common point of view, speaking is a skill that is difficult to mature. For Göğüş (1978) this is due to ignorance of the main objectives of education and that the students are not educated in accordance with these objectives and qualifications.

Yalçın (2018) states that speaking as an innate skill, is not an asset that one can make use of this skill effectively. Therefore, he strongly advocates that the individual is required to develop the skill of speaking effectively in order to use his personal rights and fulfil his responsibilities, and accordingly shall receive an effective education of language.

Speaking skill, with regard to its important role in communication, maybe said to have significance in all fields of teaching. Gordon (2011) points out the importance of effective communication for the teacher-student relationship. Taşkaya (2012) referring to the significance of communication in teacher-student relationship, states that it was suggested for the teacher candidates that they shall be trained for the development of their communication skills. Yüksel (2001) also points out the significance of communication among the characteristics of a qualified teacher. With regard to the above mentioned statements, it is possible to say that it is important to enhance the speaking skills of all teachers, who would be role-models for their students, but primarily mother tongue and class teachers.

Theoretical Background of the Study

There are various practices that are carried out for the development of speaking skills of students in general and teacher candidates in particular. Various dimensions regarding the skill and teaching of speaking emerge during these researches and implementations.

Aslan and Yaylı (2019, pg. 6) advocate that speaking skill is no different from the others and that it might be evaluated together with writing skills; however that there are controversies among two regarding generation and social appereances. According to Hughes (2011), the generated appereance of verbal statement are variable, temporary, unplanned, context-dependent and verbal/auditory. Generated appereance of written expression is different.

Measurement tools are another field of study regarding speaking skills. Bozkurt (2019) analyzed these measurement tools and identified below categories among them:

- ✓ Breathing
- ✓ Utterance
- ✓ Fluence
- ✓ Organization of Speech
- ✓ Content
- ✓ Use of Language
- ✓ Body Language
- ✓ Interaction
- ✓ Presentation

Although these categories were presented by the researcher with the purpose of identifying the evaluation criteria, it is also possible to claim that they are significant sub-skills of speaking. Bayat (2019) states that linguistic production, which involves the act of speaking, is divided into various stages by a variety of researchers and provides some samples. Bayat also introduces various models of speaking. Major models, which were introduced by Bayat may be named as; Fromkin Speaking Model, Garret Model, Dell Speaking Generation Model, Levelt Speaking Model. In all these models, speaking process is introduced with stages, which vary due to small details among themselves. These models contribute to the understanding and identification of the speaking process and determination of the nature of speaking fully and correctly.

Hasırcı (2019, pg.213) states the importance of planning in teaching speaking; however that teachers are not qualified as per the model of teaching speaking and thus the development of students' speaking skills is accidential. As per Hasırcı's reference to Burns and Goh (2012), planning cycle of teaching speaking and objectives of each stage of it shall be previously introduced.

Yıldız (2019) emphasizes the importance of design of activity for the development of speaking skills and eventually introduces the qualifications that shall be possessed in order for them to be effective. According to Yıldız, major points that shall be considered regarding the design of activities are; determination of students' level of readiness, ensuring an intense participation in activities, participation of students, particularly of timid nature, ability to attract attention during activities, the presence of learning and assessment phases and not being limited with the acquisitions that were stated in the program.

According to Aykaç and Çetinkaya (2019, pg.260), creative drama is one of the major methods that would enable an effective procesburnss of teaching and learning. Drama would contribute to the self-expression of the students and the development of their skills of listening and comprehension; because drama provides students with a sense of language which enables them to understand its use in different contexts, thus become social; and develop their skills for critical thinking and problem solving.

Creative drama is identified as one of the methods for the development of speaking skill. It is frequently encountered in literature that research implementations have been carried out in order to determine the effect of creative drama on linguistic skills in general and speaking skill in particular.

Heathcote and Wagner (1990), stating that dramatic interactions contributed to the development of intellectual and linguistic skills, emphasizes the positive effects of creative drama on learning. Wagner (1998) states that drama had a positive effect on not only the linguistic development, but also self-esteem, self-realization, empathy, helpfulness and attaining the qualifications of self-conception.

Stabler (1980) lists the objectives of creative drama method regarding the skill of speaking as; development of self-esteem in speaking, enhancement of fluency in speaking, enhancement of vocabulary, expression and development of emotions and thoughts, development of the skill of building a communication, development of listening skill, development in the secondary language usage, discussion, differentiation and evaluation.

Aykaç (2014) states that practices that adopt creative drama method enhance the language used by the individual and its quality. Adıgüzel (2012) reflects that the individual realizes a sincere communication with the people of her imagination without any limitations during the process of creative drama activities. Communication has a significant role within the aspect, aim and content of scope of drama. Concept of communication is quite important for the participants of drama process. The main concept that is required to be reached in the creative drama work is communication. When the creative drama practices and practices that involve certain techniques of this method are analyzed, it is observed that the process that is experienced makes the speaking of the individual more effective. Students who participate in creative drama practices not only learn, but also have the opportunity to develop several skills. Such skills may enable them to socialize, to increase their self-sufficiency, self-respect and the respect that they feel for the society and to analyze incidents with an independent and democratic attitude.

San (2002), states that creative drama method provides people with various speaking methods. He emphasizes that drama has a unique style of language and therefore the student has the opportunity to approach himself and his environment with a critical point of view.

Uşaklı (2011) indicates that drama is an effective method, which contributes to the students' social communication skills, their awareness and to the increase in their self-respect and respect for the relationships that they experience as a group.

Considering these evaluations, it is possible to foresee creative drama as a method that could be utilized for the teacher candidates to enable them to build an effective communication and develop their self-sufficiency and attitude toward speaking. This study was realized with the objective to test this foresight.

Research Problem

In verbal expression classes, do creative drama based teaching patterns have an effect on teacher candidates regarding their attitude toward speaking and their perception of self-sufficiency?

Sub-problems

Sub-problems of this research are as listed:

1. Is there a significant difference between the pre-test and post-test points of "Perception of Speaking Self-Sufficiency Scale" of the experimental group, for which the verbal expression class was structured with drama and the control group which was implemented the teaching methods that were present in the program?
2. Is there a significant difference between the pre-test and post-test points of "Verbal Expression Class and Perception of Attitude Towards Verbal Expression Scale" of the experimental group, for which the verbal expression class was structured with drama and the control group which was implemented the teaching methods that were present in the program?
3. What are the opinions of Turkish language teacher candidates about their perceptions of self-sufficiency in speaking, before and after the experimental process?
4. What are the opinions of Turkish language teacher candidates about their own attitudes toward speaking, before and after the experimental process?
5. What are the opinions of Turkish language teacher candidates about the comparison of creative drama-based verbal expression classes and the ones that were carried out in a traditional fashion?

Limitations

This research is limited with verbal expression classes and the "speaking skill", as being one of the fundamental language skills of teacher candidates, who attend 1st Grade Verbal Expression class of Turkish Language Teaching Department of Dokuz Eylül University, at the spring term of 2017-2018 academic year, for a period of 12 week semi-experimantal implementation.

METHOD

Research Design

Method of research is the mixed one which combines quantitative and qualitative methods. Johnson and Onwuegbuzie (2004) state that the primary objective of mixed method research is the verification and development of results by using quantitative and qualitative data and the secondary objective is the creation of new research questions via data that is obtained by implementing quantitative and qualitative methods. Creswell and Garrett (2008) emphasizes that the results, which are obtained by combining quantitative and qualitative data in the mixed method researches, have strong aspects in terms of clarification of research problems. Balcı (2016) points out that in the mixed method quantitative and qualitative data acquisition techniques are used simultaneously or that quantitative and qualitative methods are implemented consecutively. In order to bring an explanation to the quantitative results of the research, explanatory consecutive pattern, which is present within the content of mixed method, has been used (Creswell, 2013). Accordingly, first the quantitative data was acquired, then in the second phase, qualitative data was acquired via open ended questions on subjects that were questioned within the quantitative data.

Study model is partly an experimental one, which is a random model with a control group of pre-test and post-test. In the model with a control group, for which pre-test and post-test were used, there are two groups that were formed via random method. One of these groups functions as the experimental and the other as the control group. Therefore, for both groups that take place in the study, some measurements shall be made before and after the experiment (Karasar, 2007: 97).

Within the semi-experimental model that was used in the research, effect of creative drama, which was implemented on the experimental group, was taken as independant variable of research. Students' attitudes toward verbal expression and their perception of self-sufficiency in speaking were taken as the dependent variable.

Study Group

The study group of the research consisted of 90 students, who attended 1st Grade Verbal Expression class of Turkish Language Teaching Department of Dokuz Eylül University, Buca Faculty of Education, at the spring term of 2017-2018 academic year. Experimental and control groups had 45 students each. As semi-experimental pattern was used in the research, convenience sampling method was used for the selection of study group and the research was realized with the study group which was selected via this method. Via convenience sampling method, the researcher has the opportunity to reach convenient and volunteering participants easily. Thus, this method is frequently used in social sciences (Gravetter & Forzano, 2018). In the experimental group, total of twelve drama-based activities were implemented whereas for the control group, teaching activities that were already present in the program were used.

Data Collection Instruments

In the study, two different scales were used for the acquisition of quantitative data. Prior to the experimental work, measurements were realized by implementing "Verbal Expression Class and Attitude Scale toward Verbal Expression" by Sallabaş and Yelok (2009) and "Perception Scale for Self-Sufficiency in Speaking" by Aydın (2013) to the teacher candidates. For the qualitative aspect of the study, data was acquired via semi-structured interview technique in order to clarify the quantitative data. For that purpose, a semi-structured interview form was created via expert opinions and the subject was transformed into 3 themes of questions. First two of these three questions ask about the attitudes which were questioned by quantitative scales and perceptions of attitude towards self-sufficiency. Teacher candidates were asked to compare the class that they previously attended (Freshman, 1st semester) and the experimental one via question number three. As the qualitative data is directly related with the experimental process, they were not used for the control group. As the third

question asks for the comparison of the previous class with the experimental process, this question was not asked to the experimental group prior to the experimental process

Data Collection Process

The main study part of the research was composed of 3 different stages. These are; preliminary measurement, experimental processes, last measurement.

1. Preliminary Measurement

Before the experimental process, teachers candidate were informed about creative drama and program. Then; a preliminary measurement was carried out with the attitude and self efficacy scale.

2. Experimental Procedures

Experimental procedures started on 5 February 2018 and ended on 15 may 2018. The application covered 12 weeks and 48 lessons.Achievements in the "verbal expression"curriculum with students of the experimental group, achievements depending on the purpose of using your voice and body language effectively (MEB 2006), creative drama workshops consisting of animation and evaluation stages were implemented.In creative drama workshops, speaking skills that teacher candidates may need in their professional lives are taken as the subject. In the control group, lessons were taught by means of straight narration (question-answer) based on the acquisitions.

3. Last Measurement

"Attitude towards verbal expression" to experimental and control group students after the applications and the last measurement was realized by applying "self-efficacy perception scale". In order to explain the quantitative data, the opinions of the students of the experimental group were collected through semi-structured interview forms consisting of three questions. In the first two of these three questions, opinions regarding the attitude and self efficacy perception questioned with quantitative scales were asked. With the third question, candidates teachers were asked to compare the lesson process they took before (1st grade 1st semester) with the experimental process.

Data Analysis

Analysis of Quantitative Data

At the quantitative aspect of this study, it is examined if there is any difference between the experimental group, on which creative drama method was implemented and the control group for which traditional program activities were used, in terms of attitude toward verbal expression and perception of self-sufficiency toward speaking. For this purpose SPSS 22 (Statistical Package for Social Sciences) packaged software was used. The effect of creative drama method, which is the independent variable of the study, on the dependant variables of attitude toward speaking and perception of speaking self-sufficiency was measured by ANCOVA method for the analysis of differences between the groups in terms of dependent variables following the elimination of common ones. At the end of the experimental process, in order to test the effectiveness of the experimental process the co-variance analysis technique (ANCOVA) was used to see whether there was a significant difference between the post-test score averages which were corrected according to the pre-test results of the experimental and control groups (Bonate, 2000; Büyüköztürk, 2006; cite in Serin, 2011). The significance level was taken as .05 in the study.

Analysis of Qualitative Data

In the qualitative aspect of the study the experimental group were asked open-ended questions regarding their emotions and thoughts about their speaking self-sufficiency and their attitudes toward speaking, before and after the experimental practice that lasted twelve weeks. The third question, which was aiming the post experimental process and asked teacher candidates to compare the verbal expression class that they had taken previously (Freshman, 1st semester) and the verbal expression classes that they participated during the experimental process, was asked after the experimental process. Acquired data was analyzed via content analysis. Positive and negative emotions and

thoughts were determined as basic themes of the analysis. Yıldırım and Şimşek (2011), pointing out that the main objective of content analysis is to reach concepts and relations which are capable of describing the acquired data, state that it is necessary to conceptualize the acquired data, organize them logically according to occuring concepts and determine the themes that described the data.

FINDINGS

Cronbach Alpha values were used for reliability analysis. Results of reliability analysis of measurement tools which were used in the research namely; "Verbal Lecturing Class and Attitude Scale toward Verbal Expression" and "Perception Scale for Self-Sufficiency in Speaking" are provided in Table 1.

Table 1. Results of reliability analysis of attitude scale toward speaking and perception scale of self-sufficiency

Name of the Test	Measurement	Number of Statements	Ratio of Reliability (Cronbach's Alpha)
Attitude	Pre-test Measurement	30	.90
	Post-test Measurement	30	.94
Self-Sufficiency	Pre-test Measurement	46	.94
	Post-test Measurement	46	.96

As per the analysis of reliability values, the ratios which were obtained in pre-measurement and post-measurement may be evaluated as quite high. A reliability ratio of .70 and higher is considered to be sufficient for the reliability of test scores for the tests which measure the psychological quality (Büyüköztürk, 2015). Reliability values of the scales that were used in this study appeared higher than .90, which might be considered as quite high. The Kolmogorov Smirnov test was used to see if a distrubition of scores significantly differs from a normal distrubition (Field, 2009, p.145-147).

Table 2. Descriptive statistics of experimental and control groups and normality test results with Kolmogorov-Simirnov Z

Dependent Variables	Independent Variables	Statistic	df	Sig.	Skewness Z	Kurtosis Z
Pre-test Attitude	Experimental	.101	45	.200*	.935	1.375
	Control	.120	45	.106	.600	.158
Post-test Attitude	Experimental	.103	45	.093	.827	.372
	Control	.069	45	.200*	.474	1.027
Pre-test	Experimental	.118	45	.126	.951	.679
Self-Sufficiency	Control	.093	45	.200*	1.610	.214
Post-test	Experimental	.083	45	.200*	.432	.728
Self-Sufficiency	Control	.088	45	.200*	1.443	.063

Kolmogorov-Simirnov Z was used to find out whether the scores of the dependent variables followed a normal distribution within each subgroup and whether the variances were equal in order to measure whether there was a significant difference between the means of the pre-test and post-test results of the control and experimental groups' attitude toward verbal expression and Self-Sufficiency skills by means of ANCOVA.

Kolmogorov-Smirnov test for normality was performed for all dimensions (pre-test and post-tests of attitude and self sufficient) to ensure that the data represented a normal distribution. A general guideline for skewness is that if the number is greater than +1 or lower than –1, this is an indication of a substantially skewed distribution. For kurtosis, the general guideline is that if the number is greater than +1, the distribution is too peaked. Likewise, a kurtosis of less than –1 indicates a distribution that

is too flat (Hair, et al., 2017, p.61). For small samples (n < 50), if absolute z-scores for either skewness or kurtosis are larger than 1.96, which corresponds with a alpha level .05, then reject the null hypothesis and conclude the distribution of the sample is non-normal (West, Finch & Curran, 1995). Skewness and kurtosis values are within ± 1 limits. Skewness and kurtosis indices were found to be within the limits ± 1.96. Parametric data should resemble a normal distribution for using the parametric statistics techniques.

The measurements related to the experimental and control groups follow a normal distribution and the variances are equal. In addition, the pre test and post test scores of the experimental group's attitude toward verbal expression and Self-Sufficiency skills, and there is a correlation at between the pre test and post test scores of the experimental group's attitude toward verbal expression and Self-Sufficiency skills. All of the correlations are significant at the .05 level. The results can provide evidence for the fact that there is a linear correlation between the pre and post test scores. With respect to these results, the covariance analysis was used to determine whether there was a significant difference between the means of the corrected post test scores according to the control and experimental groups' attitude toward verbal expression and Self-Sufficiency skills.

This part of the study consists of findings and comments that are the results of measurements regarding the sub-problems of the research.

Findings Regarding the First Sub-Problem

As per the findings that were obtained from the results of ANCOVA analysis, findings of the first sub-problem are provided below.

Table 3. Descriptive statistics of self-sufficiency test points as per the experimental and control groups

Group	N	Mean	Corrected Mean
Experiment	45	181.466	181.351
Control	45	164.622	164.738

Although a significant difference was not observed between the pre-test results of experimental and control groups prior to the experimental process, ANCOVA analysis, which is adopted as a solid statistic method by Büyüköztürk (2015, p.111), was realized. ANCOVA analysis is a method which enables the statistical control of variables that have a relation with dependent variable apart from the independent variable, of which effect is being tested on both groups, also named as common variable. Shortly, the analysis determines whether the change in dependent variable is due to the independent one (Kılıç, 2017). $\bar{x}$=181.466 average of post-test in the experimental group was corrected as $\bar{x}$=181.351; whereas $\bar{x}$=164.622 average in the control group was corrected as $\bar{x}$=164.738. The slight difference between post-test averages and the corrected ones may be due to that there was no difference in the results of pre-tests.

Table 4. ANCOVA Analysis of post test self-sufficiency points which were corrected as per the pre-test results

Source of Variety	Sum of Squares	Sd	Average of Squares	F	P	n^2
Pre test	201.449	1	201.449	.377	.541	.004
Group	6172.919	1	6172.919	11.537	.001	.117
Error	2748128.000	87	535.038			
Total	2748128.000	90				

When eta-squared value is analyzed, effect size was determined as n^2 = .117 medium (Cohen, 1992). As per the ANCOVA analysis results in Table 3, a statistically significant difference was identified between the post test test corrected average points among the experimental and control groups ($F_{(1-87)}$

=11.537, p < .05). Therefore, it may be accepted that the creative drama method, which was implemented on the experimental group, was effective on speaking self-sufficiency.

Findings Regarding the Second Sub-Problem

As per the findings that were obtained from the results of ANCOVA analysis, findings of the second sub-problem are provided below.

Table 5. Descriptive statistics of attitude test points as per the experimental and control groups

Group	N	Mean	Corrected Mean
Experiment	45	131.288	131.276
Control	45	114.822	114.835

$\bar{x}$=131.288 average of post test in experimental group was determined to be a corrected average of $\bar{x}$=131.276; $\bar{x}$=114.822 in the control group was determined as a corrected average of $\bar{x}$=114.835. Given that there was only a slight difference between the post test averages and the corrected ones, it is possible to consider that there was no difference between the pre-test results.

Tablo 6. ANCOVA analysis of post-test attitude points for groups that were corrected as per the pre-test results

Source of Variety	Sum of Squares	Sd	Average of Squares	F	P	n^2
Pre-test	2.127	1	2.127	.009	.925	.000
Group	6041.603	1	6041.603	25.378	.001	.226
Error	2748128.000	87	535.038			
Total	2748128.000	90				

When eta-squared value is analyzed, effect size was determined as n^2= .226 medium. As per the avcova analysis results in Table 6, a statistically significant difference was identified between the post test test corrected average points among the experimental and control groups ($F_{(1-87)}$ = 25.378, p < .05). Therefore, it may be accepted that the creative drama method, which was implemented on the experimental group, was effective on the attitude toward speaking.

Findings Regarding the Third Sub-Problem

What are the opinions of Turkish language teacher candidates regarding their perception of self-sufficiency in speaking before and after the experimental process?

Table 7. Emotions and thoughts of experimental group students regarding their self-sufficiency in speaking before the experimental process

Theme	Description	Codes	F	%
Emotion	Speaking and its sub-factors	Positive (body language, tone of voice, giving examples, making use of similes)	10	22
		Negative (implementation, being criticized, ineffective body language, shyness, being bored, breath control, lack of eye-contact, swallowing words, lack of integrity in speaking)	35	78

"I saw that it was ultimately useful, I learned how to get prepared for a speech in front of an audience by experiencing it."

"It was very useful, it taught us about the details and tricks of making a speech"

"Our verbal expression class was drama-based so it had a high permanence."

"It was useful, I learned what was right and wrong for a speech, I made a progress between the first and the last class."

"I learned how to use jests and mimics most effectively, I expressed myself comfortably as the ambience was very friendly."

"It was a fun class it addressed not only the hands or the brain, but all organs of the body. This class would also be an extremely effective one for the growth of liberal, talkative and social individuals."

"I felt very comfortable during the class, I expressed my opinions freely, this class was a privilege for us."

"Class was no longer boring and I was looking for the class each week, I was learning while enjoying the class and this is a very important thing, too. Shortly, this was the best verbal expression class I have ever seen."

"This class had a philosophical effect on me from the very first day. Instead of memorizing, I was showing up and thinking. It was the most enjoyable class for me because I was able to get rid of the fear of not being able to do it."

"It was extremely effective for me, I learned to use my body language and tone of my voice. It was a class that increased my self-confidence."

"Learning about the body language was very useful."

"I used to be timid and embarrassed. I overcame this problem and my self-confidence improved."

"It had a huge contribution. I learned to speak publically."

"It helped me speak fluently and without interruption."

"It was bridge between learning and teaching."

"I improved my communication skills, I am observing things regarding my relationships with other people that I was never aware of."

"It was absolutely useful, improvised speaking helped us to overcome our excitement and deal with emergencies. We learned how to take advantage of missing parts, superman inside us showed up."

"This class taught me how to speak effectively."

"I was unable to express myself, I learned how to do it."

"It increased my self-confidence, it made me build a more effective communication while talking to others."

"It was useful, I learned do's and dont's of a speech, I made progress between the first and last class."

"Every subject of the class had a meaning, each subject taught me something."

"I used to be scared of public speaking, but I overcame my fears after this class."

"Participation of all students made the class permanent and it was effective for us to overcome our fears."

"Instead of just sitting down and listening, practice improved us."

After the experimental process, replies of Turkish language teacher candidates regarding their self-sufficiency in speaking may be considered as impressive. A student saying, "Superman inside us showed up." is revealing a significant awareness regarding the contribution of the process to himself. Self-confidence, which is also observed in other students' direct expressions, reveals itself in a metaphorical way with this statement. Students evaluate these practices as a solution for body language, excitement and being free from a timid identity, which are the most significant concepts of verbal expression. As a conclusion, it is possible to claim that drama-based verbal expression activities are very useful.

These expressions are supportive of the results of quantitative measurement regarding the perception of self-sufficiency in speaking. Among the results of pre-tests and post-tests on perception of self-sufficiency, there is a significant difference in favor of post-tests where all expressions turned from negative to positive at the end of the experimental process.

Findings Regarding the Fourth Sub-Problem

What are the opinions of Turkish language teacher candidates about their own attitudes toward speaking before and after the experimental process?

Table 8. Frequency and percentages of emotions and thoughts of experimental group students regarding their attitudes toward speaking before the experimental process

Theme	Description	Codes	F	%
Emotion	Emotions Regarding the Method	Positive (willing, caring, joyous,)	8	17
		Negative (not enjoying speaking, careless behaviour, no pleasure, shyness, timidness, concern of being criticized)	37	83

Sample sentences regarding Table 8 are provided below:

"I refrain myself from public speaking."

"I like speaking, but I don't act carefully and attentively."

"I enjoy speaking with my friends but I get nervous when I do didactic talks."

"I am not always willing as I am afraid of receiving criticisms."

"I try to pick my words carefully in public but this makes me nervous."

"The feeling that I would make a mistake makes me nervous."

"I lose my spontaneity when I try hard to be careful."

"I try to look willing to persuade the person in front of me."

"I enjoy talking among friends, I like discussing things."

"I organize my way of talking as per the demand of the person speaking to me."

Replies of questions, which were asked to experimental group teacher candidates regarding their attitude toward speaking before the experimental process, were 37 negative answers among 45 students; whereas only 8 students used expressions that could be regarded as positive. As per the expressions of teacher candidates, statements of attitude toward speaking before the experimental process may be consired as quite far from the level desired.

Table 9. Frequency and percentages of emotions and thoughts of experimental group students regarding their attitudes toward speaking after the experimental process

Theme	Description	Codes	F	%
Emotion	Emotions Regarding the Method	Positive (willing, attentive, joyous, self-confident, comfortable, careful, enjoyable, effective, without hesitation, without concern)	50	100
		Negative	0	0

Sample sentences of Table 9 are provided below:

"Instead of hesitating to speak, I started to take pleasure out of speaking."

"I can express the thoughts that I want to transmit to the person against me more easily."

"I started to behave more carefully, I realized that people are affected by the way we talk."

"My fear of public speaking decreased, because we made too much practice."

"I used to be very nervous in case of improvised speeches but I think I speak more effectively after the class."

"Public speaking was not so hard actually."

"The reason I was so excited while speaking was my lack of practice I am more comfortable now."

" As the effect of the way I speak increased I started to convince people more easily, and this gave more pleasure to me."

"I think that this class changed me, because now people care about what I have to say."

"I realized how important words were. After the drama class, now I pick my words carefully."

All the answers that were given to the open-ended questions, which were asked to the teacher candidates regarding attitues after the experimental process, reflect quite a positive attitude. When the answers given to the open-ended questions before and after the experimental process are compared, the positive change in their attitude toward speaking is observed. These results are supportive of the quantitative data, which was obtained from pre-test and post-test results.

The concepts which attract most attention among the expressions of the teacher candidates are self-confidence and comfort. Students who talk willingly with self-confidence may be expected to generate a positive attitude toward the class and hence speaking. Attitude is regarded as one of the indispensable conditions for success. It is also possible to derive the conclusion from students' expressions that motivation, which as well is one of the significant concepts of learning, also raised to a very high level. Considering these points, it is possible to reach the evaluation that these activities provide a significant contribution to the emotional aspect.

Findings Regarding the Fifth Sub-Poblem

What are the opinions of Turkish language teacher candidates about the comparison of creative drama-based verbal expression classes and the ones that were carried out in a traditional fashion?

Table 10. Frequency and percentages of emotions and thoughts of experimental group students regarding the experimental process

Theme	Description	Codes	F	%
Karşılaştırma	Comparison of drama-based verbal expression classes with the previous ones.	Positive (Good that it is practical, permanent learning, more effective classes, not passive but active, more educatory, joyous learning, feeling more comfortable, previous classes were based on memorization, this one is practical)	50	100
		Negative	0	0

Sample sentences regarding Table 10 are provided as below:

"As this class was not only theoretical like the previous ones, but had practice in it, it provided permanent learning."

"It has no negative aspects it was much more productive in terms of its functioning."

"We had more opportunity to participate when compared with other classes."

"It provided students more opportunity to participate."

"It was more useful than the others, I started to use my body language more effecively as it had drama in it."

"This class, which was previously quite boring and dull, became quite joyous via this method."

"Previous classes were so boring that I can hardly remember anything. No need for a comparison."

"Previous classes of verbal expression were boring, ordinary and dull. I did not have the opportunity to practise what I learned. Now we practised."

"We used to forget what we learned in the previous verbal expression classes, but things we learned in this class was permanent."

"Previously we were only making speeches, but this semester we learned something in each class and we enjoyed it."

"I grasped the aim of this class in this semester."

"No negative aspect. The positive aspect was that each student was active."

"In the previous classes there was the narrative and the audience. It was not useful."

"We were passive in the previous classes, we participated in this one and it became more effective."

"We were not taught how we could talk correctly and more effectively. This class made us learn about these."

"We were not able to practise in the previous classes. In this class we had the opportunity to practise."

"In previous classes we waited for our turn and went non-sense however in this class we learned joyously."

"We lived and we learned."

"Previous class was very tense, this semester we were more relaxed in the class."

"This class was more friendly. We dozed off in other classses, but we enjoyed this one."

"Previous classes were based on memorization, but practices that we made in this class improved me."

Comparative statements of Turkish language teacher candidates are remarkable. It is observed that they perceived drama-based classes more positive than the previous ones. Negative statements regarding classes which were carried out via traditional methods against the positivity of the emotions and thoughts toward drama-based classes is quite thought-provoking. Previous classes were not practical or even if they were, the practices were not as natural and spontaneous as practices of drama, so it explains why drama-based classes were valued so much.

DISCUSSION and CONCLUSIONS

It is observed that the teacher candidates put forward a significant difference in favor of the experimental group with regards to their attitudes toward speaking and perceptions of self-sufficiency, in between creative drama-based speaking activities and the control group, with whom traditional implementations were carried out.

On the other hand, in the experimental group students' expressions regarding the effect of drama-based classes on attitude toward speaking and perception of self-sufficiency, there were many positive expressions about the positive contribution of the experimental process. Also in their comparions with the previously used traditional processes, it is seen that they made expressions that were in favor of the drama-based classes. Similar conclusions were reached in some other experimental studies, in which creative drama was used as a teaching method. These studies were carried out by Temizkan

(2011), Laurin (2010), Kara (2011), Ataman (2008), Güler (2008), Arieli (2007) and Akoğuz (2002) with various age groups and grade levels.

As result of the research that they carried out, Larsen-Freeman (1986;78) observed that drama practices increased self-confidence of the students. This observation has also been supported by the results of this research. In this regard, it is possible to say that creative drama is not only effective in qualifying people with many properties, but also effective in the development of self-sufficiency of teacher candidates in speaking skillls.

The effect of drama training was shown in various studies for several fields, namely: development of verbal creativity (Ömeroğlu,1990), supporting social and emotional development (Ceylan, 2009; Kamaraj, 2004), supporting auditory, reasoning and operational skills (Erbay and Ömeroğlu 2013) and development of creative thinking skills (Can-Yaşar, 2009). Maden (2010) researched about the effect of role cards, which is one of the drama techniques, on speaking skills and reached the conclusion that role cards had more effect on the success in speaking skills than the traditional teachings. It was also stated by the teacher candidates that their speaking skills were enhanced as they felt happy and secure during the practices.

Aykaç's (2011) study was structured with a mixed model, which was a mixture of quantitative and qualitative research methods, and was realized in order to determine the effect of kids' literature-based creative drama activities on speaking skills. At the end of the research, he obtained positive results in favor of experimental group students and reached the conclusion that the creative drama method was more effective on the development of the speaking skills than the program activities.

Başcı and Gündoğdu (2011) realized a study with a scanning model in order to identify the attitudes and opinions of teacher candidates regarding the drama class. At the end of the study, the conclusion was that creative drama method, when used effectively, provided permanent learning; developed self-confidence, imagination and creativiy; provided a joyous learning and increased communication skills.

Türkel (2013) analyzed the effect of creative drama method on the writing attitude and success by using a semi-experimental method on a control group and identified that 85% of the group had positive thoughts and emotions and that creative drama activities were more useful than the activities in the MEB (Ministry of National Eduction) program.

Becker and Roos (2016) in his study that he realized in order to determine the attitude of students towards the creative speaking activities in class, points out that natural qualities of children shall be made use of for the improvement of their communication skills and emphasizes that children perform much more effective and meaningful speeches in improvizational activities.

Nurhayati (2016), attracting attention to the point that the improvement of students' writing and speaking skills is not easy, realized a study in order to measure the effect of drama on these skills. As a result of his study, the reached the conclusion that the creative drama method improved students' body language, jests-mimics and entonation and thus their speaking skills.

Alvarado (2017) researched about the effect of drama and theatre activities on the speaking skills and analyzed the implementations in the literature. As the result of his researches, he reached the conclusion that classes which were structured via techniques of drama and theatre encouraged students to talk and let them Express themselves more comfortably.

Şengül and Ünal (2018) analyzed the effect of creative drama method on communication skills and reached the conclusion that it developed teacher candidates' principles and basic skills of communication, self-expression, active listening and non-verbal communication, willingness to communicate and communication skills with its sub-aspects.

Köse (2018) realized a study on a single group in order to determine the effcet of creative drama method on speaking skill. He stated that students were using very brief sentences before the study,

whereas the observed during the recorded lessons of implementation that their speaking skills enhanced and that there was a significant difference between early weeks and the last ones.

Dere (2019) realized a study by using a semi-experimental pattern with a pre and post-test control group, on which he implemented a drama program of 12 weeks in order to provide them with a willingness to communicate, the basic elements of communication, self-expression, active listening and verbal and non-verbal communication skills. By the end of the process, he obtained significant results in favour of the experimental group.

Millah (2019) realized a thesis study in order to improve students' speaking skills via drama activities. As the result of his work, he states, depending on the students' statements, that their skill of expression was improved as the enjoyed it and felt comfortable during the process.

It is seen that the conclusion of this research matches up with all the above mentioned studies and that the results of this research support the results of the similar studies that were previously made. As a conclusion, it is possible to state that creative drama is a useful method for teaching speaking and that it is required to be used for all levels of education.

Suggestions

As per the results of this research, following suggestions may be provided for the enhancement of attitude toward and self-sufficiency for speaking:

1. When the research results are analyzed, it is confirmed that Turkish language teachers' attitudes and perceptions of self-sufficiency in speaking increased via implementation of drama method. It would be useful if speaking training classes which adopted drama methods would be included in the programs of the Faculties of Educational Sciences in order to enhance the speaking skills of mother tongue teacher candidates and teachers of other disciplines.
2. Active teachers may participate in creative drama based seminars of speaking for the enhancement of their speaking skills.
3. Independent classes of creative drama and speaking or classes with the content of communication may be included in the middle school and high school programs.

Instructors who teach verbal expression classes in faculties of educational sciences may be given creative drama trainings and hence classes may become more effective.

REFERENCES

Adalı, O. (2009). *Anlamak ve anlatmak* [Understanding and telling]. İstanbul: Pan Publishing.

Adıgüzel, H. Ö. (2012). *Eğitimde yaratıcı drama* [Creative drama in education]. Ankara: Naturel Publishing.

Akoğuz, M. (2002). *İletişim becerilerinin geliştirilmesinde yaratıcı dramanın etkisi* [The impact of creative drama in improving communication skills]. Unpublished Master Thesis, Ankara University Institute of Educational Sciences, Ankara.

Aktaş, Ş., & Gündüz V. (2001). *Yazılı ve sözlü anlatım kompozisyon sanatı* [Written and verbal expression composition art]. Ankara: Akçay Publishing.

Alvarado, J. S. (2017). The use of theater and drama techniques to foster speaking skills in the English class. *Revista De Lenguas Modernas, 26*,305-317.

Arieli, B. (2007). *The integration of creative drama into science teaching*. Kansas State University, *USA.* From www.proquest.com

Aslan, Y., & Yaylı, D. (2019). Konuşma eğitiminde temel kavramlar [Basic concepts in speaking education]. Çetinkaya, G. (ed.). *Konuşma ve eğitim* [Speaking and education], (p.6-18). Ankara: Pegem Publishing.

Ataman, M. (2008). *Yaratıcı drama ve yaratıcı yazma* [Creative drama and creative writing]. Date of Access: 22.03.2008 http://www.yaratıcıdrama.org/content/viev/88/122/.

Aydın, İ. S. (2003). Öğretmen adaylarının konuşma öz yeterliklerine ilişkin ölçek geliştirme çalışması [Development of a speaking self-efficacy scale for teacher candidates]. *Mediterranean Education Research Journal, 14*, 33-46.

Aykaç, M., & Çetinkaya, G. (2011). Yaratıcı drama etkinliklerinin Türkçe öğretmen adaylarının konuşma becerilerine etkisi [The effect of creative drama activities on preservice Turkish language teachers' speaking skills]. *Turkish Studies, 8*(9), 671-682.

Aykaç, M. (2014). Türkçe öğretiminde çocuk edebiyatı metinleriyle kurgulanan yaratıcı drama etkinliklerinin anlatma becerilerine etkisi [The effect of creative drama effects on expression skills with Turkish literature text in Turkish teaching*]. Ankara University, Journal of Faculty of Educational Sciences, 47*(1), 209-234.

Aykaç, M., & Çetinkaya, G. (2019). Konuşma eğitiminde temel kavramlar [Speaking education in basic concepts] Çetinkaya, G. (ed.). *Konuşma becerisi ve yaratıcı drama* [Speaking skills and creative drama], (p.259-282). Ankara: Pegem Publishing.

Balcı, A. (2016). *Sosyal bilimlerde araştırma yöntem teknik ve ilkeleri* [Research methods techniques and principless in social science]. Ankara: Pegem Academy.

Başaran, M., & Erdem, İ. (2009). Öğretmen adaylarının güzel konuşma becerisi ile ilgili görüşleri üzerine bir araştırma (A research about views of teacher candidates on rhetorical speaking skill). *Kastamonu Education Journal, 17*(3), 743-754.

Başcı Z., & Gündoğdu, K. (2011). Öğretmen adaylarının drama dersine ilişkin tutumları ve görüşleri: Atatürk Üniversitesi örneği [The attitudes and opinions of prospective teachers related to drama course: The case of Atatürk University]. *Elementary Education Online, 10*(2), 454-467.

Bayat, N. (2019). Konuşma eğitiminde temel kavramlar [Basic concepts in speaking education]. Çetinkaya, G. (ed.). *Konuşma modelleri* [Speech models]. (p.20-40), Ankara: Pegem Publishing.

Becker, C., & Roos, J. (2016). An approach to creative speaking activities in the young learners' classroom. *Education Inquiry, 7*(1), 9-26.

Bonate, P.L. (2000). *Analysis of pretest-posttest designs.* Boca Ration: Chapman and Hall.

Bozkurt, B. Ü. (2019). Konuşma eğitiminde temel kavramlar [Basic concepts in speaking education]. Çetinkaya, G. (ed.). *Konuşmanın zihinsel ve fiziksel temeleri* [Mental and physical foundations of speech]. (p.44-68). Ankara: Pegem Publishing.

Burns A., & Goh, C.M.H. (2012). *Teaching speaking: a holistic approach*. New York: Cambridge University Press.

Büyüköztürk. Ş. (2006). *Experimental designs pretest-posttest control group design and data analysis.* Ankara: Pegem Publishing.

Büyüköztürk, Ş. (2015*). Sosyal bilimler için veri analizi el kitabı: İstatistik, araştırma deseni* [Manual of data analysis for social sciences: Statistical research pattern]. Ankara: Pegem Publishing.

Can-Yaşar, M. (2009). *Anasınıfına devam eden altı yaş çocuklarının yaratıcı düşünme becerilerine drama eğitiminin etkisinin incelenmesi* [Investigation of the effect of drama education on creative thinking skills of six years old children attending kindergarten]. Unpublished Doctoral Thesis, Ankara University Institute of Science, Ankara.

Ceylan, G. (2009). *Vineland sosyal- duygusal erken çocukluk ölçeğinin geçerlik güvenirlik çalışması ve okul öncesi eğitim kurumuna devam eden beş yaş çocuklarının sosyal-duygusal davranışlarına yaratıcı drama eğitiminin etkisinin incelenmesi* [Validity and reliability study of Vineland social-emotional early childhood scale and investigation of the effect of creative drama education on the social-emotional behavior of five-year-old children attending pre-school education institution]. Unpublished Doctoral Thesis, Gazi University, Ankara.

Cohen, J. (1992). A power primer. *Psychological Bulletin. 112*(1), 155-159.

Creswell, J. W., & Garrett, A. L. (2008). The "movement" of mixed methods research and the role of educators. *South African Journal of Education, 28*(3), 321-333.

Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches* (4nd ed.). Thousand Oaks, CA: Sage.

Dere, Z. (2019). Dramanın öğretmen adaylarının iletişim becerilerine etkisinin incelenmesi [Analyzing the effects of drama education on pre service teachers' communication skills]. *Başkent University Journal of Education, 6*(1), 59-67.

Erbay, F., & Ömeroğlu, E. (2013). A study on the effects of creative drama education given to children attending nursery class on their auditory reasoning and processing skills. *Education and Science, 38*(169), 41-50.

Field, E. (2009). *Discovering statistics using SPSS*. Third Edition. London*:* Sage Publications.

Gordon, T. (2001). *E.Ö.E. Etkili öğretmenlik eğitimi* [Effective teacher education]. (Trans.: Aksay, E.). (11nd ed.). İstanbul: Sistem Publishing.

Göğüş, B. (1978). *Orta dereceli okullarımızda Türkçe ve yazın eğitimi* [Turkish and summer education in our intermediate schools]. Ankara: Kadıoğlu Publishing.

Güler, İ. K. (2008). *İlköğretim dördüncü sınıf Türkçe dersinde yaratıcı drama yönteminin etkililiği* [The effectiveness of creative drama method in fourth grade Turkish lesson in primary education]. Unpublished Master Thesis, On Dokuz Mayıs University Institute of Social Sciences Primary Education Department, Samsun.

Gravetter, F. J., & Forzano, L. A. B. (2018). *Research methods for the behavioral Sciences (6th ed.).* Stamford: Cengage Learning Asia Pte Limited.

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A Primer on partial least squares structural equation modeling* (PLS-SEM). 2nd Ed. Thousand Oaks, CA: Sage

Hasırcı, S. (2019). Konuşma eğitiminde temel kavramlar [Basic concepts in speaking education]. Çetinkaya, G. (ed.). *Konuşma Eğitiminin Planlanması* [Planning of speech education]. (p.213-229). Ankara: Pegem Publishing.

Heathcote, D., & Wagner, B. (1990). *Drama as a learning medium.* (6nd edition). Stanley Thornes, Publishers Ltd.

Hughes, R. B (2011). *Teaching and researching speaking*. Harlow: Pearson.

Johnson, R., & Onwuegbuzie, A. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher, 33*(7), 14-26.

Kamaraj, I. (2004). *Sosyal becerileri derecelendirme ölçeği'nin Türkçe'ye uyarlanması ve beş yaş çocuklarının atılganlık sosyal becerisini kazanmalarında eğitici drama programının etkisi* [The effect of the educational drama program on adapting the social skills rating scale to Turkish and gaining assertiveness social skills of five-year-old children]. Unpublished Doctoral Thesis, Marmara University, İstanbul.

Kara, Ö. T. (2011). Dramayla Öykü oluşturma yönteminin ilköğretim ikinci kademe Türkçe öğretimine etkisi [The effect of method of story formation with drama on the attitude of the secondary school students in Turkish lessons]. *Mustafa Kemal University Journal of Social Sciences Institute, 8*(16), 239-253.

Karasar, N. (2007). *Bilimsel araştırma yöntemi* [Scientific research method]. (17nd.). Ankara: Nobel Publishing.

Katrancı, M. (2014). Öğretmen adaylarının konuşma becerisine yönelik özyeterlik algıları [Pre-service Teachers' Self efficiacy Perception of their Speaking Skills]. *Bartın University Journal of Education, 3*(2), 175.

Kılıç, S. (2017). Kovaryans Analizi [Analysis of Covariance]. *Journal of Mood Disorders, 7*(1), 73-78

Köse, A. (2018) *İlköğretim ikinci kademede becerisinin geliştirilmesine yönelik yaratıcı drama temelli izlence önerisi* [Creative drama based suggestion for the development of speech skill at second level in primary education]. Unpublished Master Tesis, Gazi University Institute of Educational Sciences, Ankara.

Larsen-Freeman, D. (1986). *Techniques and principles in language teaching.* Oxford: Oxford University Press.

Laurin, S. (2010). *The effect of story drama on children's writing skills.* Unpublished Doctoral Thesis, Concordia University.

Maden, S. (2010). Rol kartlarının konuşma eğitimindeki başarı ve tutum üzerine etkisi [The effects of role cards as drama technique on success and attitude in teaching of speaking ability]. *Journal of Çankırı Karatekin University Institute of Social Sciences, 2*(2), 23-38.

MEB (2006), *Primary Turkish lesson education program (6, 7, 8th grade).* Ankara: MEB Publishing.

Millah, R. I. (2019). *Students' experience in playing drama: A focus on speaking skills: A case study at The Twelfth Grade Students of MA Asshiddiqiyah 3 Cilamaya Wetan-Karawang.* Unpublished Doctoral Thesis, UIN Sunan Gunung Djati Bandung.

Nurhayati, D. A. W. (2016). Using local drama in writing and speaking: EFL learners' creative expresssion. *Journal of English Language Teaching and Linguistics, 1*(1), 51-77.

Ömeroğlu, E. (1990). *Anaokuluna giden 5-6 yaşındaki çocukların sözel yaratıcılıklarının gelişiminde yaratıcı drama eğitiminin etkisi* [The effect of creative drama education on the development of verbal creativity of 5-6 years old children going to kindergarten]. Unpublished Doctoral Thesis, Hacettepe University Institute of Health Sciences, Ankara.

Öz, K. (2018). *Drama ile yapılandırılmış sözlü anlatım derslerinin konuşmaya yönelik tutuma ve özyeterlik algısına etkisi* [The effect of oral expression lessons structured with drama on speech attitude and self-efficacy perception]. Unpublished Master Thesis, Dokuz Eylul University Institute of Educational Sciences, İzmir.

San, İ. (2002). Yaratıcı dramanın eğitsel boyutları [Educational dimensions of creative drama]. Ö. Adıgüzel (Ed.). *Yaratıcı drama [Creative drama]. (p. 113-122),* Ankara: Natüre.

Serin, O. (2011). The effects of the computer-based instruction on the achievement and problem solving skills of the science and technology students. *The Turkish Online Journal of Educational Technolog, 10*(1), 183-201.

Sever, S. (2000). *Türkçe öğretimi ve tam öğrenme* [Turkish education and complete learning]. Ankara: Anı Publishing.

Stabler, T. (1980). *Drama in the primary school*. Schools Council Project.

Şengül, Ö., & Ünal, F. (2018). Yaratıcı drama yönteminin öğretmen adaylarının iletişim becerilerine etkisi [The effect of creative drama method on prospective teachers' communication skills]. *Journal of Ahi Evran University Kırşehir Faculty of Education, 19*(2), 1150-1161.

Taşkaya, S. M. (2012). Nitelikli bir öğretmende bulunması gereken özelliklerin öğretmen adaylarının görüşlerine göre incelenmesi [The analysis of the characteristics a qualified teacher according to the opinions of prospective teachers]. *Journal of Social Sciences Institute of Erciyes University, 33*(2), 283-298.

Temizkan, M. (2011). Yaratıcı yazma etkinliklerinin öykü yazma becerisi üzerindeki etkisi [The effect of creative writing activities on the story writing skill]. *Educational Sciences: Theory and Practice, 11*(2), 919–940.

Temizyürek, F., Erdem, İ., & Temizkan, M. (2011). Konuşma eğitimi [Speaking education]. *Education and Science, 22*(107), 28-35.

Türkel, A. (2013). Yaratıcı dramanın yaratıcı yazma başarısına ve yazmaya yönelik tutuma etkisi (Ortaokul 8. sınıf örneği) [The effect of creative drama on students' creative writing success and writing attitude (sample eighth class students)]. *Journal of Buca Education Faculty, 36*, 1-11.

Türkel, A., & Ünlücömert, N. (2013). Öğretici metinlere yönelik yaratıcı okuma uygulaması örneği ve sürece ilişkin öğrenci görüşleri [Sample of creative reading practice for ınstructive texts and the opinions of students about the process]. *Turkish Studies, 8*(12), 1345-1358.

Uşaklı, H. (2011). *Drama ve iletişim becerileri* [Drama and communication skills]. Ankara: Nobel.

Üstündağ, T. (1998). Yaratıcı drama eğitim programının ögeleri [Components of creative drama curriculum]. *Education and Science, 107*(22), 30-37.

Üstündağ, T. (2000). *Yaratıcı drama öğretmenimin günlüğü* [Creative drama Teacher's diary]. Ankara: PegemA Publishing.

Wagner, B. (1989). *Dorothy heathcote: Drama as a learning medium.* (p.173.). London: Hutchinson.

West, S. G., Finch, J. F., & Curran, P. J. (1995). Structural equation models with nonnormal variables: problems and remedies. Hoyle, RH. (ed.). *Structural equation modeling: Concepts, issues and applications*. (p. 56-75). Newbery Park, CA: Sage.

Yalçın, A. (2018). *Türkçenin öğretim yöntemleri* [Turkish teaching methods]. Ankara: Akçağ Publishing.

Yaman, H., & Karaarslan, F. (2012). Konuşma becerisinin geliştirilmesinde beyin fırtınası tekniğinin etkisi: Bir eylem araştırması [To develop the speech skills brainstorm of the effect: an action research]. *Turkish Studies, 7*(4), 545-563.

Yelok, V. S., & Sallabaş, M. E. (2009). Öğretmen Adaylarının sözlü anlatım dersine ve sözlü anlatıma olan tutumlarının değerlendirilmesi [Evaluation of Pre-Service teachers' attitudes towards verbal Lecture and verbal lecture]. *Turkish Journal of Educational Sciences, 7*(3), 581-606.

Yıldırım, A., & Şimşek, H. (2011). *Sosyal bilimlerde nitel araştırma yöntemleri* [Qualitative research methods in the social sciences]. Ankara: Seçkin Publishing.

Yıldız, D. (2019). Konuşma eğitiminde temel kavramlar [Basic concepts in speaking education]. Çetinkaya, G. (ed.). *Konuşma etkinlikleri tasarlama* [Designing speech activities]. (p.231-277). Ankara: Pegem Publishing.

Yüksel, G. (2001). Öğretmenlerin sahip olmaları gereken davranış olarak sosyal beceri [Social skills as teachers must have]. *Journal of National Education,* Issue:150.

IOJPE

ISSN: 1300 – 915X
www.iojpe.org

International Online Journal of Primary Education *2020, volume 9, issue 1*

A MODEL OF CAREER ADAPTABILITY FOR TEACHERS: EMOTIONAL INTELLIGENCE, GOAL SETTING, AND STRIVING FOR GOALS

Ali ERYILMAZ
Prof. Dr., Yıldız Technical University, Faculty of Education, Istanbul, Turkey
ORCID: https://orcid.org/0000-0001-9301-5946
aeryilmz@yildiz.edu.tr

Begüm SATICI
Assist. Prof. Dr., Artvin Çoruh University, Faculty of Education, Artvin, Turkey
ORCID: https://orcid.org/0000-0003-2161-782X
begum@artvin.edu.tr

M. Engin DENİZ
Prof. Dr., Yıldız Technical University, Faculty of Education, Istanbul, Turkey
ORCID: https://orcid.org/0000-0002-7930-3121
edeniz@yildiz.edu.tr

Received: 06-04-2020 **Accepted:** 08-06-2020 **Published:** 30-06-2020

Abstract

This study examined the structural relationship between teachers' career adaptability, emotional intelligence, striving for goals, and setting life goals. We hypothesized that emotional intelligence would predict career adaptability, and that this relationship would be mediated by striving for goals and setting life goals. A cross-sectional survey was conducted among 263 teachers, whose ages ranged from 21 to 69, with SEM and bootstrapping procedures employed. The results indicated that teachers' striving for goals and setting life goals directly predicted their career adaptability and fully mediated the effect of emotional intelligence on career adaptability. We address the possible explanations and study limitations.

Keywords: Career adaptability, emotional intelligence, striving for goals, setting life goals, teachers

INTRODUCTION

Some people, including many teachers, continue in their chosen profession for a very long time, or even their entire working lives. During this process, loving and improving their profession affects both the teachers and their students. For this reason, teachers must be adaptable during the course of their careers. Career adaptability is defined by Savickas (1997, p. 254) as the "readiness to cope with the predictable tasks of preparing for and participating in the work role and with the unpredictable adjustments prompted by changes in work and working conditions." In general, an increase in career adaptability increases the commitment of individuals to their jobs and decreases job losses (Ito & Brotheridge, 2005). Career adaptability also improves individuals' employment opportunities (Guzman & Choi, 2013) and helps them to utilize more job search strategies (Koen, Klehe, Van Vianen, Zikic, & Nauta, 2010). Studies on the career adaptability of teacher candidates and teachers (Eryılmaz & Kara, 2017; Eryılmaz & Kara, 2018; McLennan, McIlveen, & Perera, 2017) have shown that it is an important factor for education and training. Thus, teachers must become more involved in their career adaptability, both to be effective in the teaching process and to be happy in what they do.

Career Adaptability and Emotional Intelligence

Teachers' emotions and emotion regulation affect the teaching process, student success, and teachers' affections (Sutton & Wheatley, 2003), meaning that teachers need to be adept at organizing their feelings and emotions. Emotional intelligence (EI) is one of the important concepts utilized in dealing with teachers' emotions, and it is defined in different ways. The most general sense of EI is defined as the capacity of individuals to perceive, understand, analyze, and manage emotions effectively and validly (Mayer & Cobb, 2000). It is also defined as the ability to perceive emotions and to make inferences with this information (Mandell & Pherwani, 2003).

Many studies have examined the relationships between EI and work life, and have associated EI with problem-solving skills, customer satisfaction (Bardzil & Slaski, 2003), self-regulation, self-awareness, and conflict resolution (Rahim & Minors, 2003). In addition, some studies have shown that EI is an important feature of individuals who lead in organizations (Dulewicz & Higgs, 2003), and in an organized institution such as a school, teachers are the leaders of a class. Thus, EI is important for teachers because by increasing it, their job satisfaction increases (Wong, Wong, & Peng, 2010). It has been found that an increase in teachers' emotional regulation decreased their emotional exhaustion (Chan, 2006), positively affected their leadership characteristics (Iordanoglou, 2007), and increased their personal accomplishment (Castillo-Gualda, Herrero, Rodríguez-Carvajal, Brackett, & Fernández-Berrocal, 2019). Emotional intelligence is therefore an important tool for success both in school and in wider life (Epstein, 1998). Based on these findings and this information, the hypothesis in this study is that EI increases teachers' career adaptability.

Emotional Intelligence, Goal Setting, and Striving for Goals

There are studies that directly and indirectly examine the relationships between EI, goal setting, and striving for goals. In general, when such an assessment is made, individuals with high EI are actively structuring their careers; in other words, they set goals for their careers and strive to achieve these goals (Morehouse, 2007). The relationships between EI and setting goals and striving for them can be examined in terms of the function of EI. MacCann and colleagues (2020) indicated that emotions are managed with respect to personal goals. Study is suggesting that positive emotions are effective in achieving individual goals (Sutton & Wheatley, 2003). Thus, the function of individuals using EI is that they move away from negative emotions and move towards more positive ones.

According to researchers seeking to explain the characteristics of EI, it has three important features (Ashkanasy & Daus, 2005). The first is that individuals are aware of their own and others' feelings. The second is that individuals can regulate their own and others' feelings. The dimension of emotion regulation is associated with goal setting and striving for goals because, in this process, individuals use emotional activities to achieve certain goals and they exhibit certain emotions (Castro, Gomes, & de Sousa, 2012). While determining the goals behind the activities that reveal emotions, and in the realization of these activities, there is a process of striving for the goals. In short, in the process of activating EI, we need to consider goal setting and striving for goals. Based on these findings and information, the hypothesis established in this study is that EI increases both teachers' goal setting and striving for them.

Career Adaptability and Emotional Intelligence

When the relationships between goal setting and career adaptability are examined, it is seen that setting for goals and goal striving is the precursor of career adaptability. First, determining goals helps individuals to present a clear picture of their future. Moreover, the goals are a means of satisfying the important needs of people as, especially in terms of industrial institutions, they aid both the work performance and the effective planning of human resources (Greenhaus, Callanan, & Kaplan, 1995). Several studies point to the struggle for career adaptability and goal setting and striving. For example, in Greenhaus, Callanan, and Kaplan (1995), career management model individuals set various goals and then strive to achieve them while using various strategies. As a result of this process, they discover themselves and their careers; in other words, they increase their career adaptability.

Greenhaus, Callanan, and Kaplan (1995) stressed that in the career management system, the goal-setting process should be comprehensive:

> Effective career management requires an understanding of the relationship between an employee's work life and his or her family and personal life. Many people pursue a career goal without regard for its influence on the different facets of their lives. Work can often require an extensive time commitment that conflicts with other aspects of our existence, including time for family, leisure, community service, and self-development (p. 4).

In this study, career goals and relationship and body-sensory purposes have been added to the model. In this way, the aim is to reach a model of adaptation in which the individual will spend his life in a more balanced way. Based on these findings and information, the hypothesis established in this study is that teachers' goal setting and striving increase their career adaptability.

Emotional intelligence has been found to be an important factor in effective teaching according to both student evaluations and teacher evaluations (Singh & Jha, 2012). In this, there are explanations about the relationships between EI, determining goals and striving for them, and career adaptability (Avolio & Gardner, 2005; Castro, Gomes, & de Sousa, 2012; Parmentier, Pirsoul, & Nils, 2019). Based on these studies, the hypothesis in this study is that setting goals and striving for them are mediators between EI and career adaptability.

METHOD

Participants and Procedure

The participants in this research were 263 teachers in Turkey (75% female) who were recruited via a paper-and-pencil-based format. Participants who provided informed consent to participate voluntarily completed a self-report questionnaire package, which took an average of 20 minutes. Table 1 provides the participants' details.

Table 1. Participant information

Variable	*n*	Valid %
Gender		
Female	199	75.7
Male	64	24.3
Marital status		
Married	143	54.4
Single	120	45.6
Perceived socio-economic status		
Lower class	20	7.6
Middle class	232	88.2
Upper class	11	4.2

The participants ranged in age from 21 to 69 (M = 32.65; SD = 9.77); 143 (54%) were married and 120 (46%) were single. Regarding socioeconomic status, 20 identified as lower class (7.6%), 232 identified as middle class (88.2%), and 11 identified as upper class (4.2%).

Measures

Career adaptability

The Career Adaptability Scale (CAS; Eryilmaz and Kara, 2016) was used to assess teachers' career adaptability on a 5-point scale ranging from 1 (never) to 5 (very often). The CAS consists of 10 items and 2 sub-dimensions: career exploration (e.g. I can easily adapt to changes in my professional plans) and career planning (e.g. I've done career planning related to my profession). The CAS has yielded a two-dimensional solution explaining 56% of variance, and confirmed (CFA: NFI = .95; NNFI = .97; CFI = .98; IFI = .98; GFI = .94; RMSEA = .071). The CAS's sub-dimensions have been reported to have a Cronbach's alpha of .84 and .71, respectively (Eryilmaz and Kara, 2016). In this study, the Cronbach's alpha coefficient was .87.

Emotional intelligence.
The Trait Emotional Intelligence Questionnaire – Short Form (TEIQue-SF; Petrides & Furnham, 2000a, 2001) was used to assess teachers' EI on a 7-point scale ranging from 1 (completely disagree) to 7 (completely agree). The TEIQue-SF consists of 20 items and 4 sub-dimensions: sociability, emotionality, self-control, and well-being. The Turkish adaptation of the TEIQue-SF was carried out by Deniz, Ozer, and Isik (2013). They found that the Turkish TEIQue-SF yielded to a four-dimensional solution explaining 53% of variance, and confirmed (CFA: GFI = .95; AGFI = .92; CFI = .91; RMSEA = .056; SRMR = .060). The TEIQue-SF's sub-dimensions have been reported to have a Cronbach's alpha of .70, .66, .70, and .72, respectively (Deniz et al., 2013). In this study, the Cronbach's alpha coefficients were found to 0.83.

Striving for goals
The Striving for Goals Scale (SGS; A Eryilmaz, 2015) was used to assess teachers' career adaptability on a 4-point scale ranging from 1 (never) to 4 (very often). The SGS consists of 17 items and 3 sub-dimensions: commitment to goals (e.g. I am a person who never accepts living without goals), persistence in goal striving (e.g. When I can't reach my goal, I'll try my best to fix it), and giving up on goals (e.g. I give up when I can't reach my goal). The SGS has yielded to a three-dimensional solution explaining 61% of variance, and confirmed (CFA: NFI = .97; NNFI = .98; CFI = .98; IFI = .98; GFI = .94; RMSEA = .051). The SGS's sub-dimensions have been reported to have a Cronbach's alpha of .88, .86, and .86, respectively (Eryilmaz, 2015). In this study, the Cronbach's alpha coefficients were found to be .73.

Setting life goals
The Scale of Setting Life Goals concerning Positive Psychotherapy (sSLG; Eryilmaz, 2012) was used to assess teachers' setting of life goals on a 4-point scale ranging from 1 (never) to 4 (very often). The sSLG consists of 9 items and 3 sub-dimensions: achievement-career goals, relationship-based goals, and body-sense life goals. The sSLG has yielded to a three-dimensional solution explaining 69.5% of variance, and confirmed (CFA: NFI = .94; NNFI = .95; CFI = .97; IFI = .97; GFI = .94; RMSEA = .077). The sSLG's sub-dimensions have been reported to have a Cronbach's alpha of .85, .72, and .72, respectively (Eryilmaz, 2012). In this study, the Cronbach's alpha coefficients were found to be .85.

Data Analysis
The collected data were analyzed utilizing SPSS 21.0 and AMOS Graphics. Descriptive statistics and correlation analysis were performed first, before structural equation modelling (SEM) and bootstrapping were carried out.

The SEM approach was used to test the proposed hypotheses of the relationships between career adaptability, EI, striving for goals, and setting life goals. Based on the recommendation of Anderson and Gerbing (1988), a measurement model was first tested for an acceptable fit to the data using confirmatory factor analysis. Once a measurement model was confirmed, a serial structural model was analyzed using the maximum likelihood method. In order to evaluate the fitness of the SEM, chi-square statistic (χ^2), χ^2/df ratio, CFI, RFI, GFI, TLI, SRMR, and RMSEA χ^2/df ratio < 5; SRMR and RMSEA < .08; and CFI, RFI, GFI, and TLI > .90 were used as cut-off criteria (Hu & Bentler,1999; Kline, 2015).

Lastly, the significance of the mediation effects was also determined using a bootstrapping procedure with 10,000 bootstrapped samples. Significant mediation (i.e. an indirect effect) was established when the 95% bias-corrected bootstrap confidence interval (CI) did not contain 0, as suggested by Hayes (2013). The bootstrapping procedure has advantages over Baron and Kenny (1986) and Sobel's (1982) traditional approaches in testing mediation (Hayes, 2015; Preacher et al., 2007).

IOJPE
ISSN: 1300 – 915X
www.iojpe.org
International Online Journal of Primary Education 2020, volume 9, issue 1

RESULTS

Descriptive Statistics and Correlation

First, the mean, standard deviation, skewness, kurtosis, and inter-correlations of the variables were analyzed (see Table 2). In this study, all the variables fell under the skewness with an absolute value of .76 and the kurtosis with an absolute value of 2.31. Therefore, the variables satisfied skewness < 2 and kurtosis < 7 as a normal distribution (George & Mallery, 2010). In the correlation analysis, the sub-dimensions of career adaptability were significant, and positively correlated with the sub-dimensions of EI (r = .18 – .40, ps < .01). In addition, the results indicated that the sub-dimensions of career adaptability were positively correlated with the commitment to goals (r = .24 – .27, ps < .01) and persistence in goal striving (r = .33 – .37, ps < .01). On the other hand, the sub-dimensions of career adaptability were negatively correlated with giving up on goals (r = -.30 – -.37). There was a significant association between each sub-dimension of career adaptability and the sub-dimensions of setting life goals (r = .17 – .27, ps < .01).

Table 2. Correlations and descriptive statistics of the study variables

	Bivariate correlations											Descriptive Statistics			
Variable	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	***M***	***SD***	**S**	**K**
1. Career exploration [CA]	–											25.17	4.04	-1.1	2.3
2. Career planning [CA]	.58**	–										14.84	2.95	-.49	.72
3. Sociability [EI]	.33**	.18**	–									19.59	3.75	.01	.19
4. Emotionality [EI]	.28**	.20**	.40**	–								18.64	3.64	-.17	-.35
5. Self-control [EI]	.24**	.26**	.52**	.33**	–							18.38	3.97	-.11	.11
6. Well-being [EI]	.40**	.29**	.33**	.17**	.38**	–						19.71	3.85	.02	.25
7. Commitment of goals [SG]	.27**	.24**	.12*	.21**	.14**	.36**	–					19.08	3.26	-.39	.91
8. Persistence in goal striving [SG]	.33**	.37**	.23**	.17**	.36**	.45**	.53**	–				15.97	2.46	-.15	.32
9. Goals give up [SG]	-.37**	-.30**	-.42**	-.34**	-.53**	-.28**	-.17**	-.35**	–			11.15	3.79	.76	1.1
10. ACG [SLS]	.30**	.38**	.20**	.15**	.20**	.37**	.33**	.43**	-.17**	–		8.64	1.91	-.25	.41
11. RBG [SLS]	.21**	.27**	.11	.14**	.05	.23**	.33**	.37**	-.09	.54**	–	8.39	2.00	-.35	.27
12. BLG [SLS]	.17**	.15**	.14**	.11	.07	.26**	.24**	.28**	-.05	.45**	.50**	8.35	1.91	-.15	.09

Note. * p < .05; ** p < .01; *CA* Sub-dimensions of career adaptability; *EI* Sub-dimensions of emotional intelligence; *SG* Sub-dimensions of goal striving; *SLS* Sub-dimensions of settings life goals; *ACG* achievement-career goals; *RBG* relationship-based goals; *BLG* body-sense life goals; *S* skewness; *K* kurtosis

Measurement Model

As a first step in SEM, we tested the measurement models for the latent constructs of career adaptability, EI, striving for goals, and setting life goals. Each latent construct had indicators consisting of the extant sub-dimensions of the corresponding scale. The CFA indicated that the measurement model was a good fit to the data [$\chi^2_{(48,\ N\ =\ 263)}$ = 119.82, p < .001; CFI = .92; GFI = .93; IFI = .92; SRMR = .055; RMSEA = .076] and all regression weights were significant at p < .001. Thus, all four latent variables seemed to have been measured sufficiently by their respective indicators.

Structural Model

We tested three alternative models in order to find a better relationship among the study variables. First, a fully mediated model (Model I), which contained mediators (striving for goals and setting life goals) and no direct path from EI to career adaptability, was assessed. The results showed that Model I fitted the data well [$\chi^2_{(50,\ N\ =\ 263)}$ = 132.786, p < .001; CFI = .908; GFI = .917; IFI = .910; SRMR = .0585; RMSEA = .079]. Then, a partially mediated model (Model II) that drew a direct path from EI to career adaptability was tested. While the fit indices of Model II were acceptable [$\chi^2_{(49,\ N\ =\ 263)}$ = 132.613, p < .001; CFI = .907; GFI = .918; IFI = .909; SRMR = .0584; RMSEA = .081], the path between EI and career adaptability was not significant (β = -.125, p > .05). Therefore, we removed the direct pathway between EI and career adaptability and tested the theoretically hypothesized structural model (Model III). In Model III, striving for goals and setting life goals were tested as full mediators in the relationship between EI and career adaptability, and the direct associations of setting life goals with striving for goals and with career adaptability were added. Model III indicated a good model fit

IOJPE
ISSN: 1300 – 915X
www.iojpe.org
International Online Journal of Primary Education 2020, volume 9, issue 1

[$\chi^2_{(49, N = 263)}$ = 119.835, p < .001; CFI = .921; GFI = .928; IFI = .923; SRMR = .0552; RMSEA = .074.] In addition, all path coefficients were found to be significant. It was also seen that the AIC and ECVI values were lower in Model III (AIC = 177.835; ECVI = .679) than in Model I (AIC = 188.786; ECVI = .721) and Model II (AIC = 190.613; ECVI = .728). Consequently, Model III was preferred because of the significant pathways, better-fit indices, and lower AIC and ECVI values (see Table 3). Figure 1 illustrates the preferred structural model for determining associations between career adaptability, EI, striving for goals, and setting life goals.

Table 3. Model fit indices for structural models

Model	χ^2 df	CFI	GFI	IFI	SRMR	RMSEA	AIC	ECVI
Model I	χ^2_{50} = 132.786*	.908	.917	.910	.0585	.079	188.786	.721
Model II	χ^2_{49} = 132.613*	.907	.918	.909	.0584	.081	190.613	.728
Model III [c]	χ^2_{49} = 119.835*	.921	.928	.923	.0552	.074	177.835	.679

Note. * p <.001; [c] preferred Model

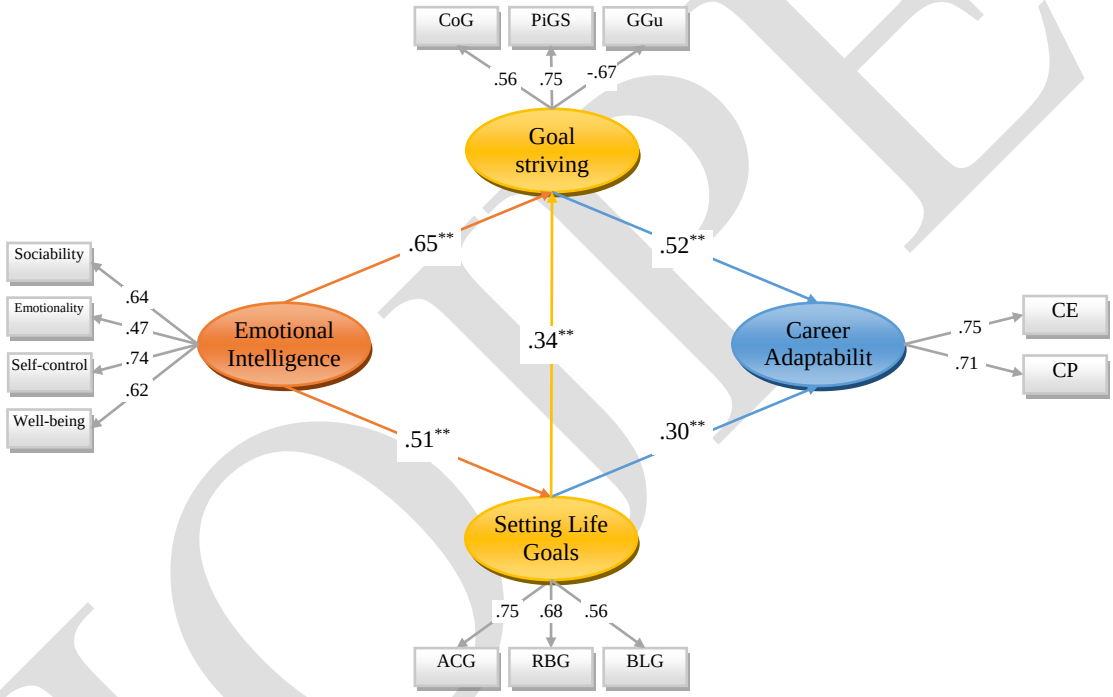


Figure 1. Standardized factor loading for the Model III

Note. ** p < .01; *CoG* commitment of goals; *PiGS* persistence in goal striving; *GGu* goals give up; *ACG* achievement-career goals; *RBG* relationship-based goals; *BLG* body-sense life goals; *CE* career exploration; *CP* career planning

Bootstrapping

This stage involved considering the indirect effects (and 95% confidence intervals) of EI on career adaptability via striving for goals and setting life goals, and of setting life goals on career adaptability via striving for goals. As shown in Table 4, there was a significant indirect effect of EI on career adaptability through striving for goals and setting life goals: B = .58, SE = .067, 95% CI [.446, 0.709].

Furthermore, the 95% CI of the indirect effect of setting life goals on career adaptability did not include zero, suggesting that striving for goals mediates the relationships between setting life goals and career adaptability: B = .175, SE = .064, 95% CI [.081, .353].

Table 4. Parameters and 95 % CIs for the paths of the Model III

Path	Estimate	SE	Lower 95% CI	Upper 95% CI
Direct				
EI → GS	.647	.085	.455	.794
EI → SlG	.509	.083	.335	.657
GS → CA	.522	.121	.274	.752
SlG → CA	.302	.139	.007	.555
SlG → GS	.335	.097	.138	.519
Indirect effect				
EI → GS – SlG → CA	.580	.067	.446	.709
SlG → GS → CA	.175	.064	.081	.353

Note. *EI* Emotional intelligence; goal striving; *SlG* setting life goals; *CA* career adaptability

DISCUSSION

This study aimed to present and test a career adaptability model for teachers. According to the results, when teachers' EI increases, their career adaptability also increases. In addition, it was found that goal setting and striving for goals had a mediating effect on the relationship between EI and career adaptability.

Thus, the increased EI of teachers affects their career adaptability. In the literature, there are studies showing that individuals who work in different fields are affected by their EI (Coetzee & Harry, 2014). However, there are few studies directly examining the relationship between career adaptability and EI in teachers, although some do examine it indirectly. For instance, teachers' emotions were found to relate to classroom management (Emmer & Stough, 2001), the creation of hopes (Beach & Pearson, 1998; Elbaz, 1992), and conflict and resolution in the education and training environment. This arrangement of teachers' emotions and feelings shows that they are increasing their commitment to their work and to their teaching process (Golby, 1996). The present study confirms such findings from the literature.

Teachers' setting of life goals and their striving to achieve these goals increases their career adaptability. The explanations given in career counseling research supports the findings of this study. A hope-centered model of career development causes individuals to set goals and strive for these goals to achieve a progress in their careers, a process that also supports their career adaptability (Niles, 2011). In terms of career structuring theory, setting and striving for goals involves the use of career adaptability (Savickas, 1997), while using adaptation skills also increases the career adaptability of individuals (Eryılmaz & Kara, 2018).

There are also studies that indirectly support the model discussed in this study that consider case studies and the effect of organizational leadership activities on organizational commitment (Avolio & Gardner, 2005; Castro & Gomes de Sousa, 2012; Kim & Beehr, 2018). There are explanations here regarding the relationships between EI, setting goals and striving for them, and career adaptability. For example, these relationships can be evaluated in the context of organizational psychology, and studies show that managing individuals' emotions makes it easier for them to reach organizational goals. In this process, individuals struggle to achieve increased motivation and organizational purposes; as a result of this process, individuals' adaptation to the environments in which they conduct their careers increases. Individuals thus get satisfaction from their working environment, and their organizational commitment increases (Avolio & Gardner, 2005; Castro, Gomes, & de Sousa, 2012). Increased satisfaction and adaptation can also improve the career adaptability of individuals.

Similarly, the relationship between EI, setting goals and striving for them, and career adaptability can also be evaluated in terms of effective leadership. According to George (2000), there is a relationship between EI and being an effective leader, as EI influences the motivation of individuals to determine goals and strive for them. Thus, individuals have a strong organizational identity. These explanations are also acceptable for teachers because they are the leaders of the classroom and their high EI can

help in setting goals for which they then strive. As a result of this situation, career adaptability is an important element of their professional self and identity.

Implications

The implementation of training programs for individuals' career adaptation facilitates their transition from teaching to work life (Koen, Klehe, & Van Vianen, 2012). The elements of the structural model tested in this study may be an element of career adaptability programs prepared for university students. In addition, the potential of EI training for teachers to increase their self-efficiency, reduce stress levels, and increase job satisfaction (Vesely, Saklofsk, & Leschied, 2013) was identified. Career adaptability programs for prospective teachers can be prepared in line with the model examined in this study; these can address issues such as EI, goal setting, and goal striving.

Limitations

Several limitations of the present study should be acknowledged. First, the cross-sectional design limited our ability to conclude causal relationships between EI, striving for goals, setting life goals, and career adaptability. Therefore, the interpretation of the mediating effects of striving for goals and setting life goals in the relationship between EI and career adaptability should be treated with caution. Thus, longitudinal or experimental studies may be carried out to examine the mediation role that can support a causal order and a better understanding of these variables. Second, the overall data was obtained from self-report scales; thus, the variable rates might have been over- or underestimated. Third, although the study involved the participation of teachers from different locations in Turkey, it was not fully and sufficiently representative of all Turkish teachers. Therefore, a more representative sample is needed to re-confirm the results of the present study.

Conclusions

This study is one of the first to examine the mediating effects of teachers' setting and striving for life goals on the association between EI and career adaptability. The study supports the view that setting and striving for life goals is a critical element in the career adaptability effect of EI. Thus, policymakers and educational administrators should pay attention to teachers' EI, goal setting, and goal striving to increase their career adaptability. This is important because teachers' career adaptability, both personal and professional, is crucial for students' well-being and the economy of the country in question.

REFERENCES

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 103*(3), 411-423.

Ashkanasy, N. M., & Daus, C. S. (2005). Rumors of the death of emotional ıntelligence in organizational behavior are vastly exaggerated. *Journal of Organizational Behavior, 26*, 441–52.

Avolio, B. J., & Gardner, W. L. (2005). Authentic leadership development: Getting to the root of positive forms of leadership. *The Leadership Quarterly, 16*, 315–38.

Bardzil, P., & Slaski, M. (2003). Emotional intelligence: Fundamental competencies for enhanced service provision. *Managing Service Quality: An International Journal, 13*(2), 97-104.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173-1182.

Beach, R., & Pearson, D. (1998). Changes in preservice teachers' perceptions of conflicts and tensions. *Teaching and Teacher Education, 14*(3), 337-351.

Castillo-Gualda, R., Herrero, M., Rodríguez-Carvajal, R., Brackett, M. A., & Fernández-Berrocal, P. (2019). The role of emotional regulation ability, personality, and burnout among Spanish teachers. *International Journal of Stress Management, 26*(2), 146–158.

Castro, F., Gomes, J., & de Sousa, F. C. (2012). Do intelligent leaders make a difference? The effect of a leader's emotional intelligence on followers' creativity. *Creativity and Innovation Management, 21*(2), 171-182.

Chan, D. W. (2006). Emotional intelligence and components of burnout among Chinese secondary school teachers in Hong Kong. *Teaching and Teacher Education*, *22*(8), 1042-1054.

Coetzee, M., & Harry, N. (2014). Emotional intelligence as a predictor of employees' career adaptability. *Journal of Vocational Behavior*, *84*(1), 90-97.

de Guzman, A. B., & Choi, K. O. (2013). The relations of employability skills to career adaptability among technical school students. *Journal of Vocational Behavior*, *82*(3), 199-207.

Deniz, M. E., Özer, E., & Işık, E. (2013). Trait emotional intelligence questionnaire–short form: Validity and reliability studies. *Education and Science*, *38*(169), 407-419.

Dulewicz, V., & Higgs, M. (2003). Leadership at the top: The need for emotional intelligence in organizations. *The International Journal of Organizational Analysis*, *11*(3), 193-210.

Elbaz, F. (1992). Hope, attentiveness, and caring for difference: The moral voice in teaching. *Teaching and Teacher Education*, *8*(5-6), 421-432.

Emmer, E. T., & Stough, L. M. (2001). Classroom management: A critical part of educational psychology, with implications for teacher education. *Educational Psychologist*, *36*(2), 103-112.

Epstein, S. (1998). *Constructive thinking: The key to emotional intelligence*, Westport, CT: Praeger

Eryılmaz, A. (2012). Investigating of psychometric properties the scale of setting life goals with respect to positive psychotherapy on university students. *Journal of Clinical Psychiatry, 15*, 166–174.

Eryılmaz, A. (2015). Development of the striving for goals scale. *Usak University Journal of Social Sciences*, *8*(4), 233-244.

Eryılmaz, A., & Kara, A. (2016). Investigation of psychometric properties of career adaptability scale. *The Online Journal of Counseling and Education 5*(1), 29-39.

Eryilmaz, A., & Kara, A. (2017). Comparison of teachers and pre-service teachers with respect to personality traits and career adaptability. *International Journal of Instruction, 10*(1), 85-100.

Eryilmaz, A., & Kara, A. (2018). A career adaptability model for pre-service teachers. *Erzincan University Journal of Education Faculty*, *20*(2), 352-365.

George, D., & Mallery, M. (2010). *SPSS for windows step by step: A simple guide and reference, 17.0 update* (10th Ed.). Boston: Pearson

George, J. M. (2000). Emotions and leadership: The role of emotional intelligence. *Human Relations*, *53*(8), 1027–1055.

Golby, M. (1996). Teachers' emotions: An illustrated discussion. *Cambridge Journal of Education*, *26*(3), 423-434.

Greenhaus, J. H., Callanan, G. A., & Kaplan, E. (1995). The role of goal setting in career management. *International Journal of Career Management*, *7*(5), 3-12.

Hargreaves, A. (2000). Mixed emotions: Teachers' perceptions of their interactions with students. *Teach. Teacher Educ.* 16, 811-826.

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York: Guilford Press

Hayes, A. F. (2015). An index and test of linear moderated mediation. *Multivariate Behavioral Research*, *50*(1), 1-22.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1-55.

Iordanoglou, D. (2007). The teacher as leader: The relationship between emotional intelligence and leadership effectiveness, commitment, and satisfaction. *Journal of Leadership Studies*, *1*(3), 57-66.

Ito, J. K., & Brotheridge, C. M. (2005). Does supporting employees' career adaptability lead to commitment, turnover, or both?. *Human Resource Management*, *44*(1), 5-19.

Kim, M. & Beehr, T. A. (2018). Empowering leadership: leading people to be present through affective organizational commitment?, The International *Journal of Human Resource Management*. Advanced Publication Online. doi:10.1080/09585192.2018.1424017

Kline, R. B. (2015). *Principles and practice of structural equation modeling (4th Ed.)*. New York: Guilford Publications.

Koen, J., Klehe, U. C., & Van Vianen, A. E. (2012). Training career adaptability to facilitate a successful school-to-work transition. *Journal of Vocational Behavior*, *81*(3), 395-408.

Koen, J., Klehe, U. C., Van Vianen, A. E., Zikic, J., & Nauta, A. (2010). Job-search strategies and reemployment quality: The impact of career adaptability. *Journal of Vocational Behavior*, *77*(1), 126-139.

MacCann, C., Jiang, Y., Brown, L. E. R., Double, K. S., Bucich, M., & Minbashian, A. (2020). Emotional intelligence predicts academic performance: A meta-analysis. *Psychological Bulletin*, *146*(2), 150–186.

Mandell, B., & Pherwani, S. (2003). Relationship between emotional intelligence and transformational leadership style: A gender comparison. *Journal of Business and Psychology*, *17*(3), 387-404.

Mayer, J. D., & Cobb, C. D. (2000). Educational policy on emotional intelligence: Does it make sense?. *Educational Psychology Review*, *12*(2), 163–183.

McLennan, B., McIlveen, P., & Perera, H. N. (2017). Pre-service teachers' self-efficacy mediates the relationship between career adaptability and career optimism. *Teaching and Teacher Education*, *63*, 176-185.

Morehouse, M. M. (2007). An exploration of emotional intelligence across career arenas. *Leadership & Organization Development Journal*, *28*(4), 296-307.

Niles, S. G. (2011). Career flow: A hope-centered model of career development. *Journal of Employment Counseling*, *48*(4), 173-175.

Parmentier, M., Pirsoul, T., & Nils, F. (2019). Examining the impact of emotional intelligence on career adaptability: A two-wave cross-lagged study. *Personality and Individual Differences*, *151*, 109446.

Petrides, K. V., & Furnham, A. (2001). Trait emotional intelligence: Psychometric investigation with reference to established trait taxonomies. *European Journal of Personality*, *15*(6), 425-448.

Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research*, *42*(1), 185-227.

Rahim, M., & Minors, P. (2003). Effects of emotional intelligence on concern for quality and problem solving. *Managerial Auditing Journal*, *18*(2), 150-155.

Savickas, M. L. (1997). Career adaptability: An integrative construct for life-span, life-space theory. *The Career Development Quarterly*, *45*(3), 247-259.

Singh, I., & Jha, A. (2012). Teacher effectiveness in relation to emotional intelligence among medical and engineering faculty members. *Europe's Journal of Psychology*, *8*(4), 667-685.

Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. *Sociological Methodology*, *13*, 290-312.

Sutton, R. E., & Wheatley, K. F. (2003). Teachers' emotions and teaching: A review of the literature and directions for future research. *Educational Psychology Review*, *15*(4), 327-358.

Tickle, L. (1991). New teachers and the emotions of learning teaching. *Cambridge Journal of Education, 21*(3), 319–329.

Vesely, A. K., Saklofske, D. H., & Leschied, A. D. (2013). Teachers-The vital resource: The contribution of emotional intelligence to teacher efficacy and well-being. *Canadian Journal of School Psychology*, *28*(1), 71-89.

Wong, C. S., Wong, P. M., & Peng, K. Z. (2010). Effect of middle-level leader and teacher emotional intelligence on school teachers' job satisfaction: The case of Hong Kong. *Educational Management Administration & Leadership*, *38*(1), 59-70.

IOJPE

ISSN: 1300 – 915X
www.iojpe.org

International Online Journal of Primary Education *2020, volume 9, issue 1*

LISTENING TO COLOURFUL VOICES: HOW DO CHILDREN IMAGINE THEIR MUSIC LESSONS IN SCHOOL?*

Şehnaz SUNGURTEKİN
Dr., Bursa Uludağ University Faculty of Education, Bursa/Turkey
ORCID: https://orcid.org/0000-0002-3581-2848
sehnazsun@uludag.edu.tr

Hülya KARTAL
Prof. Dr., Bursa Uludağ University Faculty of Education, Bursa/Turkey
ORCID: https://orcid.org/0000-0002-8684-3598
hkartal@uludag.edu.tr

Received: 09.04.2020 **Accepted:** 10.06.2020 **Published:** 30.06.2020

Abstract

In this research, it was aimed to illustrate the voices of primary school students about how they imagine their music lessons in school and the classroom. For this purpose, a focus-group interview structure was based on children's perspectives, ideas and imaginations about their music lessons. First, a pilot study consisting of a focus-group interview and a questionnaire was carried out with ten fourth grade primary school students who voluntarily took part in this research. The main study was carried out with nine different fourth grade students. Vernon Howard's 'continuum of imagination' was used to categorise students' statements and Vygotsky's laws of imagination are the key role for analysing and interpreting students' imaginative statements. Students' imaginations about their music lessons were at first about different learning environments and instruments. The statements show the importance for children to do music activities in music rooms that are well equipped with instruments as well as outside the classroom and school. The research findings may help us to understand the problems in primary music education and provide a piece of evidence about the necessity of developing good classroom practices to promote children's imaginative and creative thinking skills. Thus, we can develop an understanding that focuses on the creative needs of children in primary music education.

Keywords: Imaginative-creative thinking, primary music education, children's imagination in music lessons.

INTRODUCTION

Music educators and researchers need more information and reflections on how children imagine their music lessons and how they wish to make music together in schools. Therefore, listening to children's voices has a considerable power to shape music education in the twenty-first century in order to raise a dynamic, creative and thoughtful young generation in a challenging world. Wagner (2014) emphasizes that students need seven survival skills for twenty-first-century life, work and citizenship. These are critical thinking and problem solving, collaboration and leadership, agility and adaptability, initiative and entrepreneurialism, effective oral and written communication, accessing and analysing information, and curiosity and imagination. However, placing imagination and creativity in the main focus of education has a vital role in preparing children to be well-equipped and successful in their societies and cultures. According to Sternberg (2007), successful individuals will be those who can use their creative skills to build up new strategies for making the world a better place for all.

In today's society, imagination is seen as a magical power by many scientists, educators, academicians, artists and leaders that allow us to find new ways and techniques of searching for new ideas (McCaslin, 2016). Imagination and creativity are the unlimited potentials of the human being, and by using these effective and powerful potentials, we can change and transform the world. Kokotsaki (2011, p.101) describes the creative process as "the thinking that takes place as a person is planning to construct a creative product" and stresses the definition of Webster (1990): "The creative process is an active, constructed and dynamic mental process which swings between convergent

* A part of this article was presented at the 27th EAS/7th ISME European Regional Conference as an oral presentation, May 15 - 18 May 2019 in Malmö/Sweden.

(factual) and divergent (imaginative) thinking." Higgins (2008) emphasizes that creativity is related to the development of imagination. We may think that imagination is the beginning of a human's life. In a more in-depth understanding, it is the beginning of a life that makes us more fulfilled in crossing the borders, in pushing the limits of the present. Imagination allows us to find new possibilities for dealing with the problems we face, and this lets us create products that are useful and valuable to humankind. Professor Dorothy Webb opens a metaphoric window: "Creating a balloon in which we express ourselves differently; once we have entered the balloon, our imagination is no longer dependent on the boundaries we know, and so we have an environment that is suitable for creativity" (McCaslin, 2016, p.13). Imagining something is "to create a mental image, picture, sound, or even a feeling that can be imaginary. It is a thought process that establishes a new idea or image that was not there before" (Joubert 2001, p.18).

Recently, more and more educators and researchers have begun to emphasize the lack of importance and attention given to creativity and imagination in schools (Robinson, 2006; Gajdamaschko, 2005; Joubert, 2001) and its uncertain place in today's education (Eckhoff & Urbach, 2008). In one of his talks, "Do schools kill creativity?" Robinson (2006) emphasizes that "we do not grow into creativity, we grow out of it – or rather we are educated out of it." Gajdamaschko (2005) points out some issues about the imaginative engagement of students and their development during the school years. She mentions that educators talk about the intellectual and personality development of children without referring to the development of their imagination. However, when it comes to talking about socialization of children in schools and society, imagination is the topic that is generally left behind by educators.

Vygotsky's theoretical writings on imagination and creativity show the role of imaginative and creative thinking in childhood and the need to shape today's education in a context that aims to develop children's imaginative abilities. In one of his writings he described imagination and creativity:

> ... Imagination, as the basis of all creative activity, is an important component of absolutely all aspects of cultural life, enabling artistic, scientific, and technical creation alike. In this sense, absolutely everything around us that was created by the hand of man, the entire world of human culture, as distinct from the world of nature, all this is the product of human imagination... (Vygotsky, 2004, p.9).

Vygotsky emphasized the basis of creativity as the ability to combine elements to generate a structure, to connect the old in new ways. He stressed that imagination as a cultural function enables children to master their behaviour and is a part of their cultural experiences:

> …One of the most important areas of child and educational psychology is the issue of creativity in children, the development of this creativity and its significance to the child's general development and maturation. We can identify creative processes in children at the very earliest ages, especially in their play. A child who sits astride a stick and pretends to be riding a horse; a little girl who plays with a doll and imagines she is its mother; a boy who in his games becomes a pirate, a soldier, or a sailor, all these children at play represent examples of the most authentic, truest creativity… (Vygotsky, 1987, p.46, as cited in Gajdamaschko, 2005, p.11).

According to these quotes by Vygotsky, we need to consider the importance of imagination and creativity in children's holistic development, but how can we integrate imaginative and creative thinking into children's learning process in schools and encourage them to 'master their own imagination'? Thus, Maxine Green's (1995, p.19) statement is significant: "When you communicate to children, the excitement of imagination, of seeing new things, seeing possibility. What worries me about schools; children go to school; they do not see the point. If we can make them see, there is a point that takes imagination." She sees imaginative capacity as the ability to look at things as if they could be otherwise.

Imagination is a central part of musical experiences, whether it is composing, listening, or performing (Reichling, 1997). Musical experiences can awaken our imaginations (Green, 2001, as cited in Emberton, 2013, p.30) and enable us to create visual imagery in our minds. Music and musical activities involve creativity in the whole process of imagining, creating, performing, and responding. It is a way to improve children's critical thinking, creative thinking, collaboration and communication skills (Kim, 2017), which play a crucial role in their holistic development. Therefore, music education should support students' imaginative and creative learning and allow them to expand their imaginative thoughts and abilities to see new things and different possibilities they might encounter in their stories.

In this research, we aimed to illustrate the voices of primary school students about how they imagine their music lessons in school and the classroom. For this purpose, we used Vernon Howard's continuum of imagination to categorize students' statements. He describes the continuum of imagination in four points: "Beginning with fantasy, imagining the non-existent, imagining what exists but is not present, having an image and imposing it on something, imagining X as Y and ending with perceiving things in general and recognizing them" (Reichling, 1997, p.43). Reichling (1997) uses this continuum of imagination in investigating the role of imagination in play and music and stresses the first steps of developing a framework for music grounded in play theory. Therefore, she emphasizes that the parallels between music and play regarding the real and imaginative, such as the wit and humour of Mozart and Satie, show the dynamic interaction between make-believe and reality. Things which we face in this universe are transported from real life into play by using them differently. In this respect, students' imaginative thoughts and statements about their music lessons in this research show that real-life experiences can be elements in creating their own stories of the imagination. Through the imaginary stories, we may understand the creative and imaginative needs in music education in schools. Vygotsky's writing on the theoretical conceptions of imagination allows us to explore children's creative and imaginative experiences in formal and informal learning environments (Eckhoff & Urbach, 2008). Thus, Vygotsky's laws of imagination are the key role in this research for analysing and interpreting students' imaginative statements in relation to their music lessons.

METHODS

Study Design

A qualitative study was conducted in order to obtain an understanding of how children imagine their music lessons in school. The research is designed as a holistic case study which uses a holistic approach to understand complex social events (Yin, 2003). In this type of research design, there is a single unit of analysis, such as an individual, a school, an institution or a program (Yıldırım & Şimşek, 2008) where the researchers have the possibility to investigate the holistic and meaningful characteristics of real-life events in real contexts such as individual life cycles, small group behaviour, organizational and managerial processes, school performance, and interpersonal relations (Cohen et al., 2007; Yin, 2012 as cited in Vezne & Günbayı, 2016, p.14).

Participants

The study took place in a primary school in Bursa, one of the biggest cities in Turkey. The primary school is located in the centre of the city and has classes from the 1st grade to the 4th grade. Participants in the pilot study *(n= 10)* and main study *(n= 9)* were 4th grade primary school students who have an interest in participating in musical activities. The students were listed and randomly selected. The main study consists of nine primary school students.

Data Collection

As a means of qualitative data collection, a focus-group interview structure was based on children's perspectives, ideas and imaginations about their music lessons. First, a pilot study consisting of a focus-group interview and a questionnaire was carried out with ten fourth grade primary school students who voluntarily took part. The purpose of this pilot study was to collect preliminary data for

developing the research instrument, testing the intelligibility of the research questions and planning the main study. We asked students to describe their current music lessons and musical activities in school, and some of the questions were related to the position of the music lessons in their classroom. Some students had difficulties in understanding the questions and also in describing their ideas. We designed a more understandable questionnaire and changed some questions in order to obtain clarified data. The focus-group interview of the main study, as well as the questionnaire, was carried out with nine different fourth grade students selected randomly from the previous list. The interviews were undertaken after school and permission from parents and the school administration was obtained. The reason for preferring the focus-group interview technique was to create a group dynamic and an interaction among the students. Besides, the focus-group interview enabled children to share their opinions, imaginations and ideas on the subjects as well as their responses to the research questions. One of the distinguishing features of focus-group interviews is that the group opinion is as important as the individual opinion (Gibbs, 2012; p.26). The obtained data were categorized under specific codes and themes and analysed through content analysis. According to Arık (1992), content analysis is performed to classify and summarise verbal and written data in terms of a problem or purpose, and to categorise these data to measure certain variables in order to explain the concepts in a specific meaning (as cited in Tavşancıl & Aslan, 2001; p.21). Each student was coded with different names.

FINDINGS and DISCUSSION

Students' Views about Their Music Lessons

Before asking the students how they imagined their music lessons, we asked them to write some information about their current music lessons and music activities by using a questionnaire. According to the students' statements, music activities were listed as singing songs, playing the recorder, creating movements to songs, and listening. The singing activities were explained as singing children's songs in chorus, and sometimes performing outside the classroom, Mert: *"We sing all together in the classroom. Yesterday we went to the principal's room to sing.",* and Serap stated that they had learned the songs by reading the notes.

Playing the recorder was the most listed activity, Zuhal: *"We play four songs on the recorder on April 23rd. First, the teacher reads the notes, then we read them together, and after that we play."* and Engin: *"The teacher shows us how to play the song, then we play"* and Mert: *"The teacher asks us to listen, and then we play."* These statements show how classroom teachers teach students to play songs with the recorder. From these findings, we may understand that some of the classroom teachers teach by sight-reading and others by playing by ear or demonstrating how to play the recorder. Zeynep stated that they memorized the songs and explained how the teacher evaluated their performances in the classroom, Zeynep: *"The teacher asks us to play one by one in front of the class. If we are not good at playing, the teacher calls us later to play. He has a list; if we play correctly, he gives us a plus, if we do not, then we play later again."*

Some students indicated that they played solo in their music lessons (Zuhal, Eda, Arda, Zeynep, Mert, Engin). Zuhal and Eda: *"…when there is enough time, we play solo."* Koray and Arda stated that they created movements to songs in their music lessons: *"There is a children's song; we are doing movements according to this music."* (In the focus-group interview, Koray performed a children's song with movements which they had learned in the music lesson). Emre and Arda indicated that they listened to folk songs in the music lessons, but that mostly, listening activities were not done at all (Serap, Zuhal, Eda, Zeynep, Koray, Engin). According to students' views (Emre, Zuhal, Eda, Zeynep, Arda, Engin, Mert), some of the classroom teachers played the recorder, and Arda's teacher also played the 'baglama' (Turkish folk instrument with three double strings). Serap and Koray's teachers did not play any instruments. Emre mentioned that instruments in the music book were introduced by the teacher. Zeynep stated, "*The teacher introduces instruments such as the violin, piano and drum"* and according to Mert, the teacher introduced instruments but he did not ask students to play. Interestingly, most of the students stated that they did not come across different music instruments in

their music lessons (Eda, Zuhal, Koray, Engin, Serap). Music activities in school were performances with the school choir, competitions, and school festivals such as celebrations of special days and weeks, Mert: *"We have celebrations in school with choir, band, and orchestra on special days"*.

Students' Imaginations about Their Music Lessons

When we asked the students how they imagined their music lessons in school, first, a variety of places were described as learning environments (Table 1). One of the reasons for this may be the lack of a music room in their school. As shown in Table 1, the students imagined different types of learning environments for their music lessons, such as music halls with all the instruments inside (Eda, Zuhal), music tents (Serap), music halls where the drums were played until the morning (Engin), and music halls with soundproof rooms (Zuhal). Zeynep imagined a music camp near the seaside or in the forest with tents around where every child can play his favourite instrument/s, and Arda wished to play instruments in a music club.

Table 1. Students' imaginations about the musical learning environment

Codes	Students' Statements
Music hall	*"I wish we could have a music hall, and I'd like to have all the instruments in it." (Eda)* *"I wish we could have a hall, and whoever wants to play the drums can come and play all night long…in the summer holidays." (Engin)* *"My dream is to have a music hall, similar to a gym. A hall with musical instruments in it. I'd like to have all the musical instruments that we want to play the most. Everyone can play at the same time, but they can only hear the sound of their own instruments. No one outside can hear the sounds… there are rooms instead of tents." (Zuhal)*
Music camp or music tents outside school	*"I'd like a music camp (near the sea, stream, or in a forest) where many tents are around… everyone has their favourite instruments in each tent." (Zeynep)* *"I dreamed of a music tent by the seaside. I'd like to play an instrument in the open air or inside the tent. I imagine it would be a nice place." (Serap)*
Music club	*"A music club where everybody can play instruments." (Arda)*

Table 2 shows how students wished and imagined their music lessons to be. According to the findings, the students imagined playing the piano (Serap, Zuhal, Eda, Zeynep), flute (Zuhal), violin (Emre, Zeynep), guitar (Emre, Eda, Arda), melodica (Kaan), percussion (Mert, Engin) and other instruments rather than playing just the recorder.

Table 2. Students' statements about how they imagined their music lessons

Codes	Students' Statements
Instruments	*"…I wish we all could play an instrument. I wish I could play the piano." (Eda)* *"I dream that everyone plays drums. I'd rather have drum lessons." (Engin)* *"I want to play string instruments." (Arda)* *"Playing more instruments, playing a percussion instrument…" (Mert)* *"I'd like to play a lot of instruments. I'd like to know the notes of different instruments." (Zeynep)* *"I would rather play the drums, but there are no drums in our school." (Mert)* *"I'd love to play the guitar. I'd also like to play other instruments, like the flute." (Serap)*
Atmosphere	*"I imagine that music lessons are fun and enjoyable." (Arda)* *"I want everyone to play their favourite instrument and create a nice song to play. I imagine it would be fun." (Koray)*
Playing different music	*"I would love to play 'art music'." (Zeynep)*
Type of learning	*"Learning fast." (Emre)*
Dance/movement	*"I would like to dance ballet while my friend is playing the piano." (Eda)* *"…I'd like my friends and I to dance." (Zuhal)*

Arda and Koray imagined their music lessons to be entertaining. This illustration may show the atmosphere they wished for in their classroom. Zeynep would love to play art music. Her desire to play "art music (Turkish art music)" shows her interest in playing different styles rather than just children's songs. This statement may show the lack of playing music from different genres/styles in primary music education. The Turkish Music Curriculum (Ministry of National Education, 2018) has

four learning areas at each grade (1st grade to 4th grade): Listening and Singing, Musical Perception and Knowledge, Musical Creativity, and Music Culture. However, one of the objectives is "to recognize local, regional, national and international music genres and perceive these elements of different cultures as richness". Therefore, classroom teachers need to implement music activities to achieve the mentioned objective.

As seen in Table 2, Emre wanted to learn the guitar fast. This statement can be categorized as a type of learning and interpreted as that he wanted to play songs with his guitar in a short time. In this sense, some students can be very impatient in learning musical instruments. The fact that the student wanted to learn the guitar quickly may indicate the need for learning to play musical instruments individually in the school, maybe via guitar courses in little groups. Due to the large number of students in classes, the learning process and the type of learning may be affected. The students' voices make us think of different music teaching methods that will enable them to learn to play instruments in a way that they enjoy and feel the pleasure of playing in their music lessons. One of the students dreamed of dancing ballet (Eda) while her friend is playing the piano, while another dreamed of dancing with her friends in their music lesson (Zuhal). Children are naturally and physically active. Movement, along with play, is one of the most natural and efficacious modes of learning for young children (Bilton, 2002, as cited in Maynard & Waters, 2007). Children can recognize everything that belongs to them by dancing and moving their bodies. Movement and dance are an expression for understanding the environment. Also, they are an ideal way and tool for children to explore music (Hackett & Lindeman, 2016). Therefore, movement and dance should be integrated into the primary music curriculum. In theory, there are objectives related to movement and dance in the Turkish music curriculum, which refers to the learning topic "musical creativity". The objectives are defined as "to express feelings and thoughts about the music they listen to through drama, dance and drawing, according to the students' choice", and "to transform melody phrases into dance". One of the main issues in primary music education is that teachers have difficulties in implementing creative activities in the classroom. One of the reasons for this could be highlighted as their insufficient musical competencies. On the other hand, putting theory into practice is always a concern in education. In numerous research studies, we may see pictures which show the gap between what is suggested by the curriculum and what is implemented by the teachers (Koutsoupidou, 2005).

Analysis of Students' Imaginative Thoughts According to Vygotsky's Laws of Imagination

Some imaginative thoughts of students were categorized under the four points of Vernon Howard's continuum of imagination and interpreted within Vygotsky's four laws of imagination.

Beginning with fantasy, imagining the non-existent:

"I would like the notes to glide through the air while playing the piano. I would like them to fly one at a time. I wish I could remember again if those notes were flying directly in my mind." (Eda)

Eda was imagining flying notes that do not exist in the real world; notes which were gliding in the air and flying directly in her mind, and therefore, she was remembering (what she was remembering was unclear). She started with this fantasy and imagined what she had not seen before. This imaginative thought may have come from interactions with stories that she had heard in real life or from books, animations, cartoons, movies, songs (lyrics) or other personal narratives. We can create new combinations from our previous experiences, and this allows us to expand our imaginative thinking. Because we are not limited to our own experiences and the narrow boundaries, we can go far beyond (Vygotsky, 2004). Another excerpt is a conversation between Zeynep and Zuhal:

Zuhal: *"Everyone can play at the same time, but they can only hear the sound of their instruments. No one outside can hear."*

Zeynep: *"It is like magic. There is a room, such a soundproofed room."*

Zeynep's imaginative thought about magical soundproofed rooms was based on Zuhal's narration. Zeynep conceptualized something from another person's narration that might be based on life

experiences. Zuhal may have seen, heard or read something about soundproofed rooms in her previous experiences. According to Vygotsky's second law of imagination (2004, p.16) "a person's experience is broadened, because he can imagine what he has not seen, can conceptualize something from another person's narration and description of what he himself has never directly experienced." In this focus group, students had the opportunity to share their ideas and imaginations. They constructed new ideas with the interaction of their classmates. Zeynep's imaginary construction about a magical soundproof room was built by combining elements from reality, and she could make use of the social experiences of Zuhal in this process.

Imagining what exists but is not present:
"On top of imaginary clouds, I would like to play instruments like the piano, violin, guitar, and drum and create a choir, and once in a while, sing a song to people beneath the clouds. I would like to have the musical instruments to glide while I am playing music. I would love everyone to hear me playing music. I would like to have the rainbow open in the air while I play the instrument. My friends and I would dance, and I would like the instruments to be played on their own." (Zuhal)

Zuhal dreamed of playing all the instruments on the top of imaginary clouds, creating a choir and singing a song to the people living under the clouds. Musical instruments were gliding, and a rainbow was opening in the sky while she was playing an instrument. Zuhal was imagining what exists in the real world but is not present. The clouds and the rainbow represent the real world; the choir and musical instruments are also elements of reality. However, creating a choir on a cloud, instruments that are gliding or the self-playing instruments are creative products of the imagination. The imaginative creation combines different elements of previous experiences. For instance, the piano is Zuhal's most wanted instrument in real life, and dancing with her friends is also an expression of reality. She used these elements of reality to create her own story of imagination. Besides this, Zuhal's imagination has a joyful expression. The rainbow in the air, singing songs beneath the clouds and gliding instruments are combined products of the imagination and are associated with the emotions. When we read Zuhal's quote, we would have impressions such as joy, happiness, and pleasantness. These emotions come from reality and may influence our imagination. "The images of imagination also provide an internal language for our emotion", and "psychology has long noted the fact that every feeling has not only an external, physical expression, but an internal expression associated with the choice of thoughts, images, and impressions" (Vygotsky 2004, p.17-18). Vygotsky's third law of imagination stresses the mutual dependence between emotional reality and imagination.

Having an image and imposing it on something, imagining X as Y:
"In the music club, you know, the soldiers have weapon stores; such things, such instruments may be there." (Arda).

Arda had an image of a music club which he described as a weapon store with instruments inside. As we know, these kinds of stores are vast areas where all the military equipment (weapons) is stored. He imagined the weapon store as a place where music is played, and instruments are stored like weapons. Arda had an image of reality that he formed into a vast place which he named the "music club". He was creating a product of his imagination, and this refers to a product that exists in the real world. His imaginative story of the weapon store, which was formed as a music club, shows how imagination becomes reality.

> Examples of such crystallized or embodied imagination include any technical device, machine, or instrument. These were created by the combinatory imagination of human beings and did not correspond to any model existing in reality, but they have the most persuasive, active, and practical association with reality in that once they have been given material form, they become just as real as other things and affect the surrounding real environment (Vygotsky, 2004, p.21).

Ending with perceiving things in general and recognizing them:
According to Reichling (1997, p.47), "The role of imagination in perception and recognition is well-grounded." We transport things from real life into play-imagination, but we may use them differently.

The students created different imaginative thoughts and stories about their music lessons with creative products of their imagination like gliding notes, self-playing instruments, and magical soundproof rooms. They created fantasies that combined the imagined and the real, something that was from the real world but entering into something apart and different. They perceived things in general and recognized them. If we had asked the students to write a story that included their imaginative thoughts of music lessons, their stories would have drawn upon reality. Elements of their reality would have been transformed into a product of their imagination by using characters that are playing all the instruments on the top of imaginary clouds, creating a choir, singing songs to people beneath the clouds, and characters who are remembering things while notes are flying directly in their minds. Their stories would be combined with reality to form a product of their imagination. Their imaginative thought may be embodied in reality, and become an object, a material, or such imaginative thought and stories that alter reality. Vygotsky's fourth law of imagination shows the association between imagination and reality. This association refers to a fantasy that may represent a new product without correspondence to any object that exists in reality. However, if this crystallized imagination has been given a material form, it becomes a new object that exists in the real world. Consequentially, imagination becomes a reality, but with a potential to alter that reality (Vygotsky, 2004).

CONCLUSION and RECOMMENDATIONS

The aim of this research was to illustrate children's voices about how they imagined their music lessons in school. Despite the fact that it is not possible to draw general conclusions from within these research findings, they will give an understanding of how vital it is to give voice to children for expressing their ideas and imaginations about their music education. Before focusing on their imaginative thoughts, we asked students to give information about the current music lessons in their classroom. The students stated that music activities were mostly playing the recorder, singing songs, creating movements to songs, and listening. The students stated that there was no music club in their school, and accordingly, classroom teachers were doing fewer musical activities. While there are many clubs in different subjects at this primary school such as chess, sport and maths, the lack of music clubs and musical activities is remarkable. Yet, based on the observations of the researchers during the focus-group interview, the students were very enthusiastic about the idea of making music together and sharing their opinions, ideas and imaginations with interest. The need for music activities and music clubs in primary education seems evident, according to the students' statements. Classroom teachers are generally responsible for teaching music in this primary school where we conducted our research. In many countries, classroom teachers and teacher trainees have little or no musical training and do not feel competent in teaching music (Seung & Chung, 2014, as cited in Shin & Seog, 2018; De Vries, 2011; Russel-Bowie, 2010; Giles & Frego, 2004; Kocabaş, 2000; Küçüköncü, 2000). Another issue is that music activities are provided by musicians with little or no pedagogical training aimed at young children (Holgersen, 2008). Musical activities in schools can be described as listening, performing improvisation and composition. Improvisation is one of the creative activities where children use their bodies, voices or musical instruments. However, there are some reasons why music teachers do not use improvisation in the classroom. One of the reasons could be the lack of understanding about creativity among primary teachers, their educational background, whether they have experience of improvisation or not, or the over-excitement that improvisational activities may induce in young children (Koutsoupidou, 2005). The fore mentioned conditions cause a wide gap in music education of young learners in terms of promoting imaginative and creative thinking.

Students' imaginations about their music lessons were at first about different learning environments. The statements show the importance for children to do music activities in music rooms that are well equipped with instruments as well as outside the classroom and school. For future music education, we may discuss the possibilities for activities in outdoor learning. According to Dewey's concept of outdoors, the child learns in several ways, for instance, "The life of the child would extend out of doors to the garden, surrounding fields and forests. He would have his excursions, his walks and talks,

in which the larger world out of doors would be open to him." (Dewey, 1990, p.35 as cited in Rivkin, 1998). Dewey explained the outdoor aspect of his school as "The school building has about it a natural environment. It ought to be in a garden, and the children from the garden would be led on to surrounding fields, and then into the wider country, with all its facts and forces." (Dewey, 1990, p.75 as cited in Rivkin, 1998). The outdoor environment enables children to move freely in space to explore the world around them and experience natural phenomena such as the weather, the changing seasons and shadows (Maynard & Waters, 2007). Thus, the development and implementation of special music activities in the outdoor environment may be a potential to promote children's musical learning with a holistic and integrated approach. "Learning outside the classroom should be used as a motivational tool throughout the curriculum to encourage greater engagement from all students" (House of Commons Education and Skills Committee, 2005, p.180).

The research findings indicated that students wished to play different instruments in music lessons, not only the recorder or melodica. The lack of instruments and music rooms in primary schools in Turkey is an obstacle in developing students' competencies in music education (Sungurtekin, 2005; Sungurtekin & Çakır İlhan, 2015; Özdemir, & Yıldız, 2011; Küçüköncü, 2000). Mawang, Kigen and Mutweleli (2019) stress the socio-economic factors in developing countries (inadequate educational and communication facilities, high illiteracy rates, and high levels of poverty) that influence music pedagogical practices and creativity negatively. According to the students' imaginative thoughts in this research, students are aware of their educational needs. They want to discover different instruments and learning environments in their music education. Therefore, developing countries should implement appropriate educational policies and strategies for curriculum development in order to meet the priorities of the individual's educational needs.

Vygotsky's (2004) writings on the theoretical conceptions of imagination allow us to explore children's creative experiences when situated in formal and informal learning environments. Through research on imaginative thinking in learning environments, we can develop an understanding of classroom practices that focus on the creative needs of children (Eckhoff & Urbach, 2008). In order to promote imaginative and creative thinking through music education, we as educators and researchers need to listen to children's voices. The research findings may help us to understand the problems in primary music education and provide a piece of evidence about the necessity of developing good classroom practices to promote children's imaginative and creative thinking skills. Music mentally and emotionally engages children in thinking processes that help them to build imaginative stories (Salmon, 2010) in which they can express themselves uniquely. Through imaginative and creative thinking, children can make connections between reality and fiction, and explore and understand their environment, and this enables them to generate their prior experiences into new ideas. Unfortunately, teachers do not always offer children opportunities to get involved in creative activities (Koutsoupidou, 2005). If teachers encourage children to use their imagination in music education, children will have the opportunity to expand their creative and imaginative abilities through various forms which allow them to enrich their musical and personal experiences. According to Kokotsaki and Newton (2015, p. 491), "Thinking about a student's creative efforts is not a mechanistic process aimed at producing some measure but is about identifying how a student's world might be opened to new experiences and alternatives." Also, students need to have a voice in curriculum decision making in music education, and teachers should give students a chance to shape their music lessons according to their imaginative and creative needs and wishes, like creating their own imaginative stories, their compositions, their plays, their creative dances and more. In Salmon's (2010) study, the six-year-old Christina was asked how she felt while listening to Mozart. *"I created stories in my mind"* was her answer. This statement is significant in terms of promoting imaginary and creative thinking in music education. Zheng and Bian (2018) emphasize that teachers should encourage children to create simple music, inspire them to exert their thinking ability to complete music activities, and organize teaching within an interaction rather than giving just simple instructions in music activities. The role of the teacher in recognizing children's creative abilities and fostering the conditions where creativity and imagination can be realized is crucial, and the most important elements of creativity in the music

classroom are the teacher's strong belief in children's creative potential and a supportive climate where creative and imaginative experiences are supported in order to build confidence and competence (Kokotsaki & Newton, 2015). In addition, when only academic achievements are centred in the curriculum, music and music education become marginalized (Kim, 2017).

Well-developed imaginative activities in education lead children to be more conscious and volitional, and gradually they become masters of their imaginations (Gajdamaschko, 2005). Robinson and Aronica (2009, p.xiii) emphasized that "We need to create environments in our schools, in our workplaces, and in our public offices where every person is inspired to grow creatively". In this respect, we need to take new possibilities and perspectives into consideration for a curriculum development where imagination and creativity are appreciated, and students' imaginative and creative needs are centred on. Higginss' (2008, p.46) emphasis is on "understanding imagination as a central aim of education, as a core component of our ideals of the educated person, and indeed, as a vision of human flourishing." He stresses "such a conception that could become the basis of new initiatives to support imaginative education, not only within the arts but across the whole curriculum."

One of the limitations of this study is that we interviewed children from a middle socio-economic background, but what about the children in rural areas? What would their voices be like? Further research about the development of imagination and creativity in music education should be conducted with an extended sample to reach students from different socio-economic backgrounds and different school levels. Another recommendation for further research is to illustrate classroom and music teachers' voices on the development of imagination and creativity in music education. Do teachers consider the students' creative needs and appreciate their imaginative thoughts in their music lessons? How do teachers develop and implement good classroom practices in music education to promote imagination and creativity in school and the classroom? Teachers' perceptions could be examined through interviews, as well as observations in the classroom, in order to understand their attitudes towards imagination and creativity in music education.

According to Blenkinsop (2009, p. xiii) "How, and in what form, might educators consider the imagination and the very act of teaching across cultures?" Wagner (2014) emphasises some essential questions that must be taken into consideration: What changes must be made within the education system to prepare our students for analytic and creative thinking? Nevertheless, first of all, what must teachers do differently to stimulate students' imaginations?

REFERENCES

Blenkinsop, S. (2009). From theory to practice, key challenges. In S. Blenkinsop (Ed.), *The imagination in education: Extending the boundaries of theory and practice* (pp. ix -xvi). Newcastle, UK: Cambridge Scholar Publishing.

De Vries, P. (2011). The first year of teaching in primary school: Where is the place of music? *International Journal of Education and the Arts*, *12*(2), 1-25. Retrieved from http://www.ijea.org/v12n2/.

Eckhoff, A., & Urbach, J. (2008).Understanding imaginative thinking during childhood: Sociocultural conceptions of creativity and imaginative thought. *Early Childhood Education Journal*, *36*(2), 179-185.doi: 10.1007/s10643-008-0261-4

Emberton, E. (2013). The power of music: Opening our minds to imagine a better life. *Canadian Music Educator*, *55*(2), 29-32. Retrieved from Gale Academic One File.

Gajdamaschko, N. (2005). Vygotsky on imagination: Why an understanding of the imagination is an important issue for school teachers. *Teaching Education, 16*(1), 13-22. doi: 10.1080/1047621052000341581

Gibbs, A. (2012). Focus groups and group interviews. In J. Arthur, M. Waring, R. Coe, & L. V Hedges (Eds), *Research methods and methodologies in education* (pp. 186-192). Thousand Oaks: Sage.

Giles, A. M., & Frego, R. J. D. (2004). An inventory of music activities used by elementary classroom teachers: An exploratory study. *Update: Applications of Research in Music Education*, *22*(2), 13-22. doi:https://doi.org/10.1177/87551233040220020103

Greene, M. (1995). *Releasing the imagination: Essays on education, the arts, and social change.* San Francisco: Jossey Bass Publishers.

Hackett, P., & Lindeman, C. A. (2016). *The musical classroom: Backgrounds, models, and skills for elementary teaching* (8th ed.). New York, NY: Routledge.

Higgins, C. (2008). Modest beginnings of a radical revision of the concept of imagination. In R. Fitzgerald, & T. W. Nielsen (Eds), *Imaginative practice, imaginative inquiry: Proceedings of the sixth international conference on imagination and education* (pp. 36-47). Australian Capital Territory: The University Of Canberra.

Holgersen, S. E. (2008). Music education for young children in Scandinavia: Policy, philosophy, or wishful thinking? *Arts Education Policy Review*, *109*(3), 47-54.

House of Commons Education and Skills Committee. (2005). Education outside the classroom (Second report of session 2004-2005). London: The Stationery Office Limited. Retrieved from https://publications.parliament.uk/pa/cm200405/cmselect/cmeduski/120/120.pdf

Joubert, M. M. (2001). The art of creative teaching: NACCCE and beyond. In A. Craft, B. Jeffrey, & M. Leibling (Eds), *Creativity in education* (pp. 17-34). London: Continuum.

Kim, J. (2017). Transforming music education for the next generation: Planting 'four cs' through children's songs. *International Journal of Early Childhood*, *49*(2), 181-193. doi: https://doi.org/10.1007/s13158-017-0187-3

Kocabaş, A. (2000). Classroom teachers' opinions on their inadequate in music lessons [Sınıf öğretmenlerinin müzik derslerindeki yetersizliklerine ilişkin görüşleri]. *Pamukkale University Journal of Education*, *7*(7), 7-11. Retrieved from https://dergipark.org.tr/en/pub/pauefd/issue/11136/133195

Kokotsaki, D. (2011). Student-teachers' conceptions of creativity in the secondary music classroom. *Thinking Skills & Creativity*, *6*(2), 100-113.

Kokotsaki, D., & Newton, D. P. (2015). Recognizing creativity in the music classroom. *International Journal of Music Education*, *33*(4), 491-508. doi: 10.1177/0255761415607081

Koutsoupidou, T. (2005). Improvisation in the English primary music classroom: Teachers' perceptions and practices. *Music Education Research*, *7*(3), 363-381. doi: 10.1080/14613800500324432

Küçüköncü, Y. (2000). Music education in primary school teaching [Sınıf öğretmenliğinde müzik eğitimi]. *Pamukkale University Journal of Educational Sciences*, *7*, 8-12. Retrieved from https://dergipark.org.tr/tr/download/article-file/114902

Mawang, L., L., Kigen, E., M., & Mutweleli, S., M. (2019).The relationship between musical self-concept and musical creativity among secondary school music students. *International Journal of Music Education*, *37*(1), 78-90. doi: 10.1177/0255761418798402

Maynard, T., & Waters, J. (2007). Learning in the outdoor environment: A missed opportunity? *Early Years*, *27*(3), 255-265. doi: 10.1080/09575140701594400.

McCaslin, N. (2016). *Creative drama in the classroom and beyond* (8th ed.). Boston, MA: Pearson.

Ministry of National Education (2018). *Primary and secondary school music lesson teaching program/ 1-8.* [Müzik dersi öğretim programı İlkokul ve ortaokul 1-8. sınıf]. Retrieved from http://mufredat.meb.gov.tr/ProgramDetay.aspx?PID=357

Özdemir, G., & Yıldız, G. (2010). Musical development in the process of development [Genel gelişim sürecinde müziksel gelişim]. *Mehmet Akif Ersoy University Journal of Social Sciences Institute*, *2*(2), 77-90. Retrieved from https://dergipark.org.tr/en/pub/makusobed/issue/19434/206674

Reichling, M. J. (1997). Music, imagination, and play. *Journal of Aesthetic Education*, *31*(1), 41-55. Retrieved from https://www.jstor.org/stable/3333470

Rivkin, M. (1998). "Happy play in grassy places": The importance of the outdoor environment in Dewey's educational ideal. *Early Childhood Education Journal*, *25*(3), 199-202. 12 March 2019 retrieved from https://fr.slideshare.net/TuaNMaSTuRa/1-outdoor-environment-in-deweys-educational-ideal

Robinson, K. (2006, February). *Do schools kill creativity? [Video]*. Retrieved from https://www.ted.com/talks/ken_robinson_says_schools_kill_creativity

Robinson, K., & Aronica, L. (2009). *The element: How finding your passion changes everything.* London: Penguin.

Russell-Bowie, D. (2010). A ten year follow-up investigation of preservice generalist primary teachers' background and confidence in teaching music. *Australian Journal of Music Education*, 2, 76-86. Retrieved from https://files.eric.ed.gov/fulltext/EJ916792.pdf

Salmon, A. (2010). Using music to promote children's thinking and enhance their literacy development. *Early Child Development and Care, 180*(7), 937-945. doi: 10.1080/03004430802550755

Shin, J., & Seog, M. (2018). A collaborative group study of Korean mid-career elementary teachers for professional development in music. *International Journal of Music Education, 36*(1), 85-95.

Sternberg, R. J. (2007). Finding students who are wise, practical, and creative. *Chronicle of Higher Education, 53*(44), B11. Retrieved from https://www.chronicle.com/article/Finding-Students-Who-Are-Wise/15549

Sungurtekin, Ş. (2005). *The importance of orff instruments in music education and evaluation of their application in pre-school education institutions* [Orff çalgılarının okul müzik eğitimindeki yeri ve okul öncesi eğitim kurumlarındaki uygulamalarının değerlendirilmesi]. Uludağ University Social Sciences Institute, Unpublished Master Thesis, Bursa.

Sungurtekin, Ş., & İlhan, A. Ç. (2015). Evaluation of classroom teachers' "art and aesthetics" competencies in terms of music education competencies based on the lecturers' views [Müzik eğitimi yeterlikleri bağlamında sınıf öğretmeni "sanat ve estetik" yeterliklerinin öğretim elemanlarının görüşleri doğrultusunda değerlendirilmesi]. *Journal of Uludag University of Faculty of Education, 28*(1), 53-73.

Tavşancıl, E., & Aslan, A. E. (2001). *The content analysis and application examples [Sözel, yazılı ve diğer materyaller için içerik analizi ve uygulama örnekleri]*. İstanbul: Epsilon Publishing.

Vezne, R., & Günbayı, İ. (2016). The effect of informal learning on teachers' professional development: A case study. *International Journal on New Trends in Education and Their Implications, 7*(3), 11-22. Retrieved from https://files.eric.ed.gov/fulltext/ED585212.pdf

Vygotsky, L. S. (2004). Imagination and creativity in childhood. *Journal of Russian and East European Psychology, 42*(1), 7-97. doi: 10.1080/10610405.2004.11059210

Wagner, T. (2014). *The global achievement gap: Why even our best schools don't teach the new survivals kills our children need-and what we can do about it.* New York, NY: Basic Books.

Webster, P. R. (1990). Creativity as creative thinking. *Music Educators Journal, 76*(9), 22-28. doi: 10.2307/3401073

Yildirim, A., & Simsek, H. (2008). *Qualitative research methods in social sciences [Sosyal bilimlerde nitel araştırma modelleri]*. Ankara: Seçkin Publishing.

Yin, R. K. (2003). *Case study research: Design and methods* (3rd ed.). Thousand Oaks, CA: Sage.

Zheng, L., & Bian, C. (2018). Children's *music education from the perspective of positive psychology*. *Educational Sciences: Theory & Practice, 18*(6), 3094-3100. doi: 10.12738/estp.2018.6.211

IOJPE

ISSN: 1300 – 915X
www.iojpe.org

International Online Journal of Primary Education *2020, volume 9, issue 1*

PARENT-CHILD MATHEMATICS AFFECT AS PREDICTORS OF CHILDREN'S MATHEMATICS ACHIEVEMENT

Mehmet Hayri SARI
Dr., Nevşehir Hacı Bektaş Veli University, Faculty of Education, Basic Education Department, Nevşehir, Turkey,
ORCID: https://orcid.org/0000-0002-7159-2635
mhsari@nevsehir.edu.tr

Thomas E. HUNT
Associate Professor, University of Derby, School of Human Sciences, Derby, UK
ORCID: https://orcid.org/0000-0001-5769-1154
t.hunt@derby.ac.uk

Received: 25.02.2020 **Accepted:** 13.06.2020 **Published:** 30.06.2020

Abstract

The current study investigated the relationship between children's and parents' self-reported maths affect and children's maths achievement. Participants comprised 186 child-parent dyads in Turkey. Findings showed that maths affect in children and their parents was unrelated. However, maths affect was a significant predictor of children's maths achievement. Importantly, this varied by grade. In grade three, child maths affect significantly predicted maths achievement, whereas parent maths affect was unrelated to achievement. Conversely, in grade four, the opposite pattern emerged; parent maths affect significantly predicted children's maths achievement, whereas child maths affect was unrelated to achievement. Furthermore, children's maths achievement significantly varied according to parents' level of education, whereby children whose parents were educated to undergraduate level considerably outperformed those whose parents were educated only to primary level. Parents with a lower educational status also reported significantly more difficulty in supporting their child's maths learning. These findings point towards the importance of parent maths affect, their level of education, and perceived difficulty in supporting children, as predictors of children's maths achievement. This is only the case in grade four, as maths becomes more challenging and there is a greater emphasis on competitive assessment. As such, the home numeracy environment and family maths tension should be addressed in preparation for children moving into grade four.

Keywords: Maths affect, mathematics achievement, parent, and primary school

INTRODUCTION

When findings from the data of countries with high success in international exams (TIMSS, PISA) are evaluated, it is clear that affective variables play an important role in influencing the success of students. There is now considerable empirical evidence that highlights the role of maths anxiety and maths attitudes as predictors of children's maths achievement. In particular, maths anxiety can be viewed as a negative emotional response to maths, often with debilitating and deleterious consequences. This can be considered in terms of in-the-moment mathematical problem solving, creating a sense of panic, helplessness, paralysis, and mental disorganization (Tobias & Weissbord, 1980), but also feelings in advance of doing maths, including dread or apprehension (Ashcraft & Faust, 1994).

Studies have consistently reported a negative correlation between maths anxiety and overall maths performance in children. In a meta-analysis in 1990, Hembree reported a correlation coefficient of -.34 among children in grades 5 to 12. In a more recent meta-analysis, Namkung, Peng, & Lin (2019) also observed an overall correlation of -.34 between maths anxiety and performance in school children, with correlations of -.27 and -.36 for primary and secondary school children respectively. A similar correlation of -.27 was reported in Ma's (1999) meta-analysis. According to Cohen's (1988) guidelines, these correlations represent a small-to-medium effect.

Rubinsten et al (2018) outline a number of risk factors associated with the development of maths anxiety. These include within-child predispositions, for example brain functioning, genetics, generalised anxiety, threat-related attentional bias, and poor past performance. However, they also

highlight environmental factors that purportedly act as mediators or moderators in the development of maths anxiety. For instance, parents may feel insecure about maths and may even have deficient numerical skills. Indeed, Srivastava, Imam and Singh (2016) demonstrated a significant negative association between Indian students' maths anxiety and their parents' level of education.

Parental pressure to maintain high achievements has been linked to an increase in children's maths anxiety (Daches Cohen & Rubinsten, 2017), as has parental involvement in the maths learning process (Roberts & Vukovic, 2011). Daches Cohen and Rubinsten (2017) found that mothers' self-reported maths skills were significantly negatively correlated with children's maths anxiety. They also found that children's maths fluency was poorer if their mother reported a greater degree of help with schoolwork and pressed for intellectual development. Whilst the authors suggest some of their findings may be explained by cultural differences in definitions of parental practice, e.g. what constitutes a low or high level of support or help with schoolwork, they conclude that the homework environment, particularly parenting involving more controlling aspects, is important in the context of children's maths learning and performance. Maloney, Ramirez, Gunderson, Levine and Beilock (2015) reported that maths anxiety in parents was only related to high maths anxiety in their children if the parents were actually involved in their children's maths homework. Casad, Hale and Wachs (2015) surveyed adolescents and parents in the US and found that parents' maths anxiety significantly negatively predicted adolescents' maths attitudes, maths self-efficacy and maths achievement. Furthermore, parent-child maths anxiety interacted to predict maths achievement, demonstrating the importance of better understanding maths learning in the home environment. Together, these findings seem to indicate the importance of parental involvement, combined with their maths attitudes, in predicting children's maths attitudes and maths achievement.

Gunderson, Ramirez, Levine and Beilock (2012) suggested further ways in which parents may influence children's attitudes towards maths. The first relates to the parent's expectations about their child's maths competence. Parsons, Adler and Kaczala (1982) provided evidence that this is the case, observing that parental expectations predicted children's maths self-concept and performance better than a child's previous maths performance. Of course, it is possible that parents simply have a more realistic view of their child's actual maths competency. However, it is also possible that expectancies in some way influence a child's maths attitudes and performance. Vukovic, Roberts and Green Wright (2013) measured parental involvement and children's maths anxiety and performance. They found evidence of mediation, whereby children's maths anxiety mediated the relationship between parental involvement and maths performance. That is, parental involvement, comprising home support and expectations, reduced the child's maths anxiety, which in turn improved their performance. However, this was only found to be the case for word problems and algebraic reasoning; no mediation was found for whole-number arithmetic. Secondly, Gunderson et al (2012) propose that parents may model particular maths attitudes, which transfer to their children. Whilst there is little research on this, the work of Else-Quest, Hyde, & Hejmadi (2008) provides some potential insight. In assessing behavioural expression of emotions among 165 mother-child dyads, the researchers observed significant positive correlations in the emotions expressed between mothers and their children during mathematical problem solving at home. Emotions included positive ones, such as joy, pride and humour, whereas negative emotions included frustration, sadness and contempt. The authors discuss these findings in relation to emotional contagion. That is, the way in which one person may mimic another's emotional expressions automatically and without conscious thought (Hatfield, Cacioppo, & Rapson, 1993). As Else-Quest, Hyde and Hejmadi (2008) point out, such correlations in expressed emotion may highlight the way in which parents can shape their child's emotions during homework interactions. It may also emphasise the need for parents to carefully monitor and regulate their own emotions; detailed analysis showed that mothers were more likely to display contempt during maths-learning interactions following their child's earlier poor performance.

Mathematics achievement and affect in Turkey

According to 2015 OECD data (OECD, 2019), Turkey was among the six least performing countries in mathematics (420 compared to a mean of 490 points). Turkey was also one of just three countries that saw a deterioration in maths performance among both low and higher performers 2012-2015, with lower socio-economic backgrounds associated with poorer maths performance (Ozdemir, 2016). The most recent OECD data indicates that maths attainment in Turkey remains significantly lower than the world average. Therefore, it is important to fully understand why Turkey consistently underperforms in mathematics compared to other countries. Given the substantial literature highlighting the role of maths attitudes and anxiety as barriers to maths education, it may be necessary to focus on cognitive-affective predictors.

Sad et al (2016) conducted a meta-analysis, which investigated the association between maths anxiety and maths achievement in Turkish students. The analysis included 11 studies, totalling 8327 students from different educational stages. The results of the analysis for all eleven studies involved showed negative and statistically significant correlations between mathematics anxiety and mathematics achievement. The combined effect size was calculated for all studies according to both fixed (r=-.39) and random (r=-.44) effect models. Moderator analysis based on school level revealed that the combined effect size for the studies conducted at both middle and high school level was significant, negative and at a moderate level. In a further study of fourth grade primary school children (Sari & Ekici, 2018), structural equation modelling revealed that maths attitude positively predicted maths achievement and negatively predicted maths anxiety. There was also a negative relationship between maths anxiety and maths achievement, although attitudes to maths was a stronger predictor. No direct relationship between motivation and maths achievement was observed.

Recber, Isiksal and Koç (2018) found only a very small difference in maths anxiety according to the gender of Turkish seventh graders. This is consistent with earlier OECD data on older students in Turkey, which demonstrated little difference between males and females. Other research in Turkey has also shown no difference in maths anxiety as a function of gender (Tasdemir, 2015; Sari & Ekici, 2018), even though girls were shown to have greater motivation (Sari & Ekici, 2018). A review of maths anxiety literature in Turkey further showed a trend towards studies typically showing no gender in maths anxiety (Alkan, 2018). Whilst gender does not appear to moderate maths affect in Turkish students, there is some evidence that maths affect does change progressively with schooling. For example, Arslan et al. (2017) observed an increase in maths anxiety as grade of study increased across middle school. Indeed, it has been argued that maths affect and attitudes only begin to be shaped upon entering formal education (Savas, Tas & Duru, 2010).

Parental maths anxiety is considered to be one of the contributing factors in the formation of maths anxiety in children (Kesici, 2018). Similarly, it is argued that positive attitudes of parents towards maths have a profound effect in developing a similar mathematical attitude in their children, which in turn supports better maths achievement (Soni & Kumari, 2017). Investigating both parent and child maths affect may provide some insight into Turkey's poor standing in maths attainment and the consistent link observed between maths attitudes, anxiety and achievement, particularly in the context of grade of study. To this end, we studied maths achievement in primary school children in Turkey, along with maths affect of child-parent dyads. Firstly, we predicted that maths affect of children and parents would predict maths achievement, with more negative affect predicting lower achievement. Secondly, we predicted that parents' maths affect would predict children's maths attitudes. Thirdly, we hypothesised maths affect would not be different between boys and girls. Next, we predicted that children's maths affect would be worse in grade four compared to grade three. Finally, it was expected that education level of parents would predict children's maths achievement.

METHODS

Design & Participants

A cross-sectional, correlational design was used. The study comprised 186 pupils (43.5% males) and their parents in grades three (50.5%, mean age = 7.8 years) and four (49.5%, mean age = 8.6 years) of a moderate socio-economic primary school in the centre of Nevşehir, Turkey. Parents included 33.3% fathers and comprised the following educational backgrounds: primary school (15.1%), middle school (15.6%), high school (25.8%), associate degree (12.4%), undergraduate degree (28.5%), master's degree (2.7%).

Materials

Math Achievement Test

The Math Achievement Test (MAT) comprises a range of numerical problem-solving questions pertaining to the math teaching programme for 1st - 4th grades in Turkey, e.g. counting numbers, number patterns, word problems, and fractions. Fidan (2013) found KR-20 coefficients of .92 for 3rd grade and .96 for 4th grade. In this study, these values were calculated as .93 for 3rd grade and .94 for 4th grade.

Primary School Math Anxiety Scale

The Primary School Math Anxiety Scale (PSMAS) includes 13 items pertaining to different aspects of maths anxiety and requires participants to respond on a Likert-type scale regarding the extent to which they experience the content of each statement. The response format has three points with labels of agree, neutral and disagree. Of the 13 items in the scale, 5 were positive and 8 were negative. The highest score on the scale was 39 and the lowest on the scale was 13. Mutlu and Soylemez (2017) reported a three-factor structure: i) *positive maths attitudes*, ii) *negative maths attitudes*, and iii) *math anxiety*. The Cronbach's alpha (α) reliability co-efficient of the overall scale was .75, with values of .73, .62 and .62 for factors one to three, respectively. The current authors agreed that the name of the scale did not fully reflect the nature of it. For instance, the scale has the same name as factor three, thus not representing "attitudes" in its labelling. Consequently, the authors relabelled the overall scale as The Child Maths Affect Scale (CMAS); this new name is referred to within the analysis and discussion of the current paper.

Math Anxiety Scale for Parents

Math Anxiety Scale for Parents includes 16 items originally purported to pertain to different aspects of maths anxiety and requires participants to respond on a Likert-type scale regarding the extent to which they experience the content of each statement. The response format has five points and ranges from "strongly disagree" to "strongly agree", with higher scores representing higher anxiety. Mutlu, Sarı and Çam (2018) reported a three-factor structure: i) The emotions observed on mathematics ii) perception of failure (deficiency/inadequacy) in mathematics, and iii) The feeling of uneasiness in mathematics. The Cronbach's alpha (α) internal consistency values of the overall scale was .90, with values of .75, .85 and .88 for factors one to three, respectively. The current authors considered the labelling of the factors to be inappropriate and, in order to increase the validity of discussion and conclusions, relabelled them as follows. The first factor, the emotions observed on mathematics, was considered too vague, lacking specificity to the parents. Given the items on this factor appear to pertain to a parent's perception of their child's attitudes to maths, this was relabelled *perception of child's maths attitudes*. The second factor, perception of failure (deficiency/inadequacy) in mathematics, was considered to reflect maths self-concept or self-efficacy, whereas the items actually relate more broadly to a parent's sense of perceived difficulty in supporting their children with maths. Consequently, the second factor was relabelled *difficulty in maths support*. Finally, the third factor, the feeling of uneasiness in mathematics, was considered too vague. The items that loaded on to this factor appear to relate to the general tension and stress associated with maths learning and homework within the family environment. As such, this factor was relabelled *maths and family tension*. In addition, the authors proposed a new name for the overall scale: The Parent Maths Affect Scale

(PMAS), given that this better represents the nature of its contents. Therefore, all analyses and subsequent discussion in the current paper, whilst maintaining the proposed factor structure by Mutlu et al., make reference to these newly labelled factors and scale.

Procedure

Children in each grade completed the MAT in-class alongside the CMAS, individually and independently. A letter was sent home to parents requesting that they complete the PMAS and return it; one parent for each child completed it.

Data Analysis

Prior to data analysis, the assumption of normality was assessed. Skewness and kurtosis values were lower than the accepted threshold of 1.96 (Can, 2014) and tolerance values were sufficiently high, indicating low multicollinearity. Bivariate correlations were carried out prior to hierarchical multiple regression analyses. Between-subjects ANOVAs were used to assess group differences. Homogeneity of variance was demonstrated using Levene's test and only reported below where the assumption was not met.

RESULTS

Reliability analysis

Table 1. Internal consistency and descriptive statistics for parent and child maths affect sub-scales

	Parent maths affect scale			**Child maths affect scale**		
	Perception of child's maths attitudes	Difficulty in maths support	Maths and family tension	Positive maths attitudes	Negative maths attitudes	Maths anxiety
Cronbach's alpha	.778	.786	.816	.774	.477	.739
Mean total	9.30	12.96	7.51	13.47	6.55	5.45
Std.Dev.	3.33	4.62	2.96	2.13	2.11	1.99

For the parent maths affect scale, sub-scales two and three had good to very good internal consistency, whereas Cronbach's alpha for sub-scale one was very low (.478). Removal of item one increased Cronbach's alpha to .778. As such, the item was removed and a new scale total was calculated. For the child maths affect scale, sub-scales one and three had good internal consistency, whereas Cronbach's alpha for sub-scale two (*negative maths attitudes*) was very low. Removal of items did not increase internal consistency; therefore, this sub-scale was excluded from further analysis.

Table 2. Full bivariate correlations for grades three and four combined

	Perception of child's maths attitudes	Difficulty in maths support	Maths and family tension	Positive maths attitudes	Maths anxiety	Total Parent maths affect scale	Total child maths affect scale	Child maths achievement
PoCMA	1							
DiMS	.50***	1						
MaFT	.50***	.71***	1					
PMA	-.27***	-.08	-.14	1				
MA	.16*	.11	.10	-.42***	1			
Total PMAS	.77***	.90***	.86***	-.18*	.15*	1		
Total CMAS	-.12	.02	-.04	.59***	.49***	-.05	1	
CMA	-.22**	-.22**	-.26***	.08	-.37***	-.27***	-.26***	1

*p ≤ .05. **p ≤ .01. ***p ≤ .001.

Table 3. Full bivariate correlations for grade three

	Perception of child's maths attitudes	Difficulty in maths support	Maths and family tension	Positive maths attitudes	Maths anxiety	Total Parent maths affect scale	Total child maths affect scale	Child maths achievement
PoCMA	1							
DiMS	.58***	1						
MaFT	.60***	.69***	1					
PMA	-.34***	-.19	-.25*	1				
MA	.10	.13	.12	-.24*	1			
Total PMAS	.82***	.91***	.86***	-.30**	.14	1		
Total CMAS	-.22*	-.06	-.12	.67***	.56***	-.14	1	
CMA	-.09	-.07	-.16	.035	-.50***	-.11	-.35***	1

*p ≤ .05. **p ≤ .01. ***p ≤ .001.

Table 4. Full bivariate correlations for grade four

	Perception of child's maths attitudes	Difficulty in maths support	Maths and family tension	Positive maths attitudes	Maths anxiety	Total Parent maths affect scale	Total child maths affect scale	Child maths achievement
PoCMA	1							
DiMS	.43***	1						
MaFT	.43***	.73***	1					
PMA	-.20	.02	-.02	1				
MA	-.21*	.10	.08	-.62***	1			
Total PMAS	.73***	.90***	.85***	-.07	.15	1		
Total CMAS	.01	.13	.08	.45***	.42***	.09	1	
CMA	-.39***	-.36***	-.40***	.23*	-.29**	-.46***	-.06	1

*p ≤ .05. **p ≤ .01. ***p ≤ .001.

As shown in tables 2-4, parent maths affect was not correlated with maths affect in children. Overall, children's positive maths attitudes were negatively correlated with their self-reported maths anxiety. However, this relationship changed considerably from grade three (r = -.24) to grade four (r = -.62). Children's maths anxiety was significantly negatively correlated with their maths achievement, although the relationship was weaker in grade four (r = -.29) compared to grade three (r = -.50). Overall children's affect towards maths was correlated with their maths achievement when considering the sample as a whole. However, when considering the grades separately, results demonstrated a significant correlation for grade three (r = -.35) but not for grade four (r = -.06). Similarly, total parent maths affect scores were not correlated with children's maths achievement in grade three (r = -.11) but a significant negative correlation was observed in grade four (r = -.46); a similar pattern can be seen for all three parental sub-scales.

Sex and grade

A series of 2(child's sex) X 2(grade) between-subjects ANOVAs were carried out on total parent maths affect, total child maths affect, and children's maths achievement. Regarding total parent maths affect, there was no significant main effect of sex, $F_{(1,\ 182)}$ = 1.48, p = .23, η^2 = .01 , no significant main effect of grade, $F_{(1,\ 182)}$ = .00, p = .96, η^2 < .001 and no significant interaction, $F_{(1,\ 182)}$ = .02, p = .89, η^2 < .01. Concerning total child maths affect, there was no significant main effect of sex, $F_{(1,\ 181)}$ = 1.20, p = .23, η^2 = .01, no significant main effect of grade, $F_{(1,\ 181)}$ = 1.90, p = .17, η^2 = .01, and no significant interaction, $F_{(1,\ 181)}$ = 0.33, p = .57, η^2 < .01. Regarding children's maths achievement, whilst there was no significant main effect of sex, $F_{(1,\ 182)}$ = 1.36, p = .25, η^2 < .01, and

no significant interaction, $F_{(1, 182)} = 1.95$, $p = .17$, $\eta^2 < .01$, there was a significant main effect of grade, $F_{(1, 182)} = 27.38$, $p < .001$, $\eta^2 = .13$, whereby mean achievement in grade three was significantly higher than grade four. Means and standard deviations are displayed in Table 5.

Table 5. Means (& SDs) of parent and child maths affect and children's maths achievement according to children's sex and grade

Dependent variable			Grade		Total
			Third grade	Fourth grade	
Total parent maths affect	Sex	Males	28.87 (8.03)	28.76 (9.32)	28.81 (8.67)
		Females	30.36 (9.72)	30.62 (9.73)	30.49 (9.68)
	Total		29.74 (9.04)	29.77 (9.54)	29.76 (9.26)
Total child maths affect	Sex	Males	18.59 (2.24)	18.86 (1.12)	18.73 (1.75)
		Females	18.76 (2.87)	19.41 (2.11)	19.07 (2.55)
	Total		18.69 (2.62)	19.15 (1.74)	18.92 (2.23)
Child maths achievement	Sex	Males	11.36 (3.35)	9.45 (3.50)	10.37 (3.54)
		Females	11.47 (3.40)	8.18 (3.18)	9.90 (3.68)
	Total		11.43 (3.36)	8.76 (3.37)	10.11 (3.62)

Parent education status

A series of one-way between-subjects ANOVAs were conducted to assess the effect of parent education status on total parent maths affect, total child maths affect, and children's maths achievement. There was a significant effect of parent education status on parent maths affect, $F_{(5, 180)} = 5.80$, $p < .001$, $\eta^2 = .14$. The means displayed a generally linear trend, with parent maths affect improving as education level increases. Post-hoc analysis using Tukey's HSD demonstrated parent maths affect to be significantly worse among those with primary education compared to those with high school ($p = .05$) and University ($p < .001$) education. However, there was no significant effect of parent education status on child maths affect, $F_{(5 ,180)} = 1.57$, $p = .17$. There was a significant effect of parent education status on children's maths achievement, $F_{(5, 180)} = 4.27$, $p = .001$, with a clear linear trend towards children's maths achievement increasing as parent education status increases. Levene's test for homogeneity of variance indicated the variances differed significantly ($p = .009$). However, the ANOVA result remained significant after adjusting alpha to the more stringent value of .01. Follow-up analysis showed children's maths achievement to be significantly higher for parents with an undergraduate education compared to those with a primary education ($p = .002$). Means and standard deviations are displayed in Table 6.

Table 6. Means (& SDs) of parent and child maths affect and children's maths achievement according to parent's education level

Parent's education level	Measure		
	Total parent maths affect	Total child maths affect	Child's maths achievement
Primary school	36.19 (8.76)	19.56 (1.97)	8.41 (4.46)
Middle school	30.31 (8.32)	19.38 (2.54)	9.00 (3.66)
High school	30.27 (9.14)	18.60 (1.99)	9.85 (3.82)
Associate degree	30.43 (10.22)	19.04 (2.12)	10.91 (2.79)
Undergraduate degree	25.51 (7.97)	18.47 (2.33)	11.40 (2.79)
Master's degree	27.20 (7.33)	20.00 (2.83)	12.00 (2.45)

Regression analyses

A hierarchical multiple regression was conducted for the whole sample, with maths achievement as the outcome measure. Total parent maths affect was included in the first step and total child maths affect was included in the second step. Overall, the model was significant, $F_{(1, 182)} = 14.94$, $p < .001$, $R^2 = .14$. When included on its own in the model, parent maths affect was a significant predictor of children's maths achievement ($R^2 = .07$, $p < .001$), whereby more negative affect was associated with poorer achievement. When child maths affect was added to the model this accounted for an additional 7.2% of the variance in maths achievement, with both parent maths affect ($p < .001$) and child maths affect ($p < .001$) remaining significant predictors of maths achievement.

The same analysis was then carried out for grades three and four separately. For grade three, the overall model was significant, $F_{(1, 91)} = 8.11$, $p = .001$, $R^2 = .15$. However, whilst total child maths affect was a significant predictor of maths achievement ($p < .001$), total parent maths affect was non-significant ($p = .09$), with total child maths affect accounting for 13.8% of the total variance in maths achievement. Regarding grade four, the opposite pattern was observed. The overall model was significant, $F_{(1, 88)} = 11.25$, $p < .001$, $R^2 = .20$. When entered alone, total parent maths affect was a significant predictor of maths achievement and this remained so ($p < .001$) once total child maths affect was added to the model, whereby total child maths affect was not a significant predictor ($p = .81$). Total parent maths affect accounted for 20.3% of the variance in maths achievement.

DISCUSSION and CONCLUSIONS

In the present study, we investigated maths affect of Turkish children in grades three and four, along with maths affect in their parents and how this predicted children's maths achievement. Firstly, we predicted that maths affect of children and parents would predict maths achievement, with more negative affect predicting lower achievement. A post hoc review of the scales used indicated the measurement of more general maths affect, compared to what the original labelling of the scales indicated. Accordingly, labels of parent maths affect and child maths affect were adopted. The overall correlations were significant, supporting the hypothesis. There was a small-to-medium negative correlation for both parental and child maths affect when data were collapsed across both grades. However, on closer inspection, a different pattern of results emerged as a function of grade. In grade three, there was no relationship between parent maths affect and children's maths achievement, but child maths affect significantly, moderately correlated with their maths achievement. Conversely, in grade four, there was no significant correlation between child maths affect and maths achievement, but there was a strong significant correlation between parent maths affect and children's maths achievement. Multiple regression analyses revealed child maths affect accounted for 13.8% unique various in maths achievement in grade three, whereas parent maths affect accounted for 20.3% unique variance in maths achievement in grade four.

In contrast to what was hypothesised, there was no overall relationship between children's and parents' maths affect. However, it is important to note the factors that constitute the parent maths affect scale. Perception of child's maths attitudes may say more about the child's attitudes and behaviours displayed outside of the classroom. This could explain heightened frustration, for example, as learning becomes more assessment focused when children progress from grade three to grade four. Indeed, according to Sari et.al (2015), the competitive examination system in Turkey contributes to students' negative attitudes to maths. Difficulty in maths support to some extent may reflect parents' maths self-efficacy. Items on this sub-scale pertain to a parent's perceived difficulty in supporting their child with maths work. As children progress to grade four the work becomes more challenging and the importance of success becomes increasingly heightened. Post hoc analysis revealed parent education level to be a significant predictor of difficulty in maths support. Therefore, we tentatively suggest that the consequences of parents' difficulties in supporting children in their maths learning become enhanced during grade four. This proposition is further supported by the finding that children's maths achievement was directly related to educational level of the parent.

Further work is needed to investigate specific home numeracy practices, particularly how these may relate to maths attitudes of children and parents. Indeed, Del Rio et al (2017) provided some evidence that parental maths anxiety influences formal home numeracy practices, whereby those with lower maths anxiety were more likely to engage in advanced numeracy practice with their children. Finally, maths and family tension, may reflect the general levels of stress experienced in the home when it comes to parents supporting their child's maths learning. Consistent with the idea that children face more pressure as they move to a more assessment focused grade four, it is clear to see how this is then related to children's maths achievement in grade four. It is also consistent with the observed relationship between difficulty in maths support and children's maths achievement in grade four, but not grade three. Difficulty in maths support was strongly correlated with maths and family tension in grades three and four, suggesting a consistent relationship exists. It is possible that parents' perceived difficulty in supporting children's maths learning may be a causative factor of perceived family tension around maths. Such a proposition is substantiated by the findings that parent's education level is associated with difficulty in maths support and children's maths achievement, although further work is required to support this. It is also feasible that children's positive attitudes to maths mitigates some of the pressures experienced as children progress through the grades. The relationship between children's positive attitudes to maths and maths anxiety changed from -.24 in grade three to -.62 in grade four, highlighting the importance of positive attitudes through the transition to grade four.

The prediction that there would not be a sex difference in maths attitudes/affect was supported. Despite many findings regarding a female bias towards higher maths anxiety (Hembree, 1990; Devine et al., 2012), 2013 OECD data failed to show a difference between boys and girls in Turkey. There is also evidence to suggest a general trend in sex differences in maths anxiety might not appear until adolescence, with some studies findings no difference between boys and girls in primary school (Harari et al., 2013) and others finding mixed results (Ho et al., 2000). Whilst we predicted child maths affect to increase with grade of study, we found no significant main effect of grade. This is in contrast with other findings (e.g. Arslan et al., 2017), but it may also be the case that a wider range of grades needs to be included for differences to emerge.

Our final hypothesis was supported, whereby children's maths achievement significantly varied as a function of parents' education level. Indeed, there was a clear, linear pattern in which children's maths achievement became poorer as parents' education level decreased; on average, maths achievement in children whose parents had an undergraduate degree achieved grades 35.55% higher than children whose parents were educated to primary level. There is empirical evidence to suggest that students with parents who provide more support display higher maths achievement and a more positive attitude towards maths than students with parents who provide less support (Cai, Moyer, & Wang, 1999). Also, Silinskas and Kikas (2017) assessed perceived parental involvement in maths homework and maths performance in sixth graders. They found maths performance to be lower in children who perceived their parents to be controlling in homework situations. Conversely, those who perceived their parents as being supportive performed better. Similarly, Levpuscek and Zupancic (2009) found parental pressure negatively correlated with maths achievement in eight graders. A similar pattern has been observed in undergraduates. Macmull and Ashkenazi (2019) asked students to report on their maths self-efficacy, maths anxiety and the parenting style of their mother. They found that an authoritarian parenting style predicted higher maths anxiety. This parenting style is characterised by a restrictive and controlling environment, typically involving more punishments than rewards (Baumrind, 1968). Such parents may also lack affection and warmth (Furnham & Cheng, 2000). Research has also shown that parents' attitudes about education are conveyed to their children out of school and these attitudes are reflected in the child's classroom behaviour and in teachers' relationships with parents and children (Kellaghan et al., 1993). Parenting practices, including pressure to maintain high achievements (Daches Cohen and Rubinsten, 2017), and parental involvement in maths learning processes (Vokovic et al., 2013), appear to be associated with children's maths anxiety. In particular, maths homework may be a source of stress for some families,

with evidence to suggest that parental maths anxiety may in some way transfer to children through homework support (Maloney et al, 2015). Thus, it may be important to consider what is meant by parental support and how such support interacts with individual differences in parents, such as maths attitudes, maths self-efficacy, and level of maths education. Whilst it seems that parenting style is an important factor to consider when it comes to the home numeracy environment, this is something that should be explored in the context of emotion and maths learning.

We should highlight that, whilst the sex of the children was taken into account in the current study, there was insufficient data to assess the impact of parental sex. Previous work has demonstrated the importance of considering interactions between children and parents of the same or different sex (Casad, Hale, & Wachs, 2015). For example, Daches Cohen and Rubinsten (2017) found the most significant parental maths anxiety effect in mother-daughter dyads. Furthermore, recent work (Szczygieł, 2020) demonstrated a complex pattern of relationships concerning the relationship between children's and parents' gender, maths anxiety, grade of study, and children's maths achievement. Future work would therefore benefit from recording details of which parent is most involved in supporting their child's maths learning and to record maths anxiety and attitudes of both parents where possible. It is also important to note that parent maths affect, as studied in the current study, does not enable inferences to be made concerning cause and effect; it is unknown whether parent maths affect directly impacts a child's maths achievement. For instance, it is possible that the relationship between family tension and maths achievement is bidirectional.

In sum, our findings point towards a step change from grade three to grade four in maths achievement and its predictors. Whilst child maths affect was a predictor of maths achievement in grade three, with no influence of parent maths affect, this pattern reversed in grade four. All three sub-scales of the parent maths affect scale predicted children's maths achievement in grade four: perceived child's maths attitudes, difficulty in maths support, and maths and family tension. In combination with the observed negative relationship between parent education level and children's maths achievement, this study highlights the relevance of considering the affective domain within home numeracy as maths becomes more challenging and assessment focused. The findings emphasise the need to support parents who have limited maths education and may struggle to support their children with their maths learning.

REFERENCES

Alkan, V. (2018). A systematic review research: 'Mathematics anxiety' in Turkey. *International Journal of Assessment Tools in Education, 5*, 567-592.

Arslan, Ç., Güler, H.K., & Gürbüz, M. Ç. (2017). Ortaokul öğrencilerinin matematik kaygı düzeyleri ile öğrenme stratejileri arasındaki ilişki [Investigation of the relation between middle school students' mathematics anxiety and learning strategies]. *Mehmet Akif Ersoy University Journal of Education Faculty, (42),* 123-142.

Ashcraft, M. H., & Faust, M. W. (1994). Mathematics anxiety and mental arithmetic performance: An exploratory investigation. *Cognition and Emotion, 8,* 97-125.

Baumrind, D. (1968). Authoritarian vs. authoritative parental control. *Adolescence, 3,* 255-262.

Cai, J., Moyer, J. C., & Wang, N. (1999). Parental roles in students' learning of mathematics: An exploratory study. *Research in Middle Level Education Quarterly, 22,* 1-18.

Can, A. (2014). *SPSS ile bilimsel araştırma sürecinde nicel veri analizi* [Quantitative data analysis in the scientific research process with SPSS] (3rd ed.). Ankara: Pegem Akademi.

Casad, B. J., Hale, P., & Wachs, F.L. (2015). Parent-child math anxiety and math-gender stereotypes predict adolescents' math education outcomes. *Front. Psychol., 6,* 1597.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd Edn.). Lawrence Erlbaum Associates.

Daches Cohen, L., & Rubinsten, O. (2017). Mothers, intrinsic math motivation, arithmetic skills, and math anxiety in elementary school. *Front. Psychol., 8,* 1939. doi: 10.3389/fpsyg.2017.01939

Del Río, M. F., Susperreguy, M. I., Strasser, K., & Salinas, V. (2017). Ditinct influences of mothers and fathers on kindergartners' numeracy performance: The role of math anxiety, home numeracy practices, and numeracy expectations. *Early Education and Development, 28,* 939-955,

Devine, A., Fawcett, K., Szucs, D., & Dowker, A. (2012). Gender differences in mathematics and the relation to mathematics performance while controlling for test anxiety. *Behavioral and Brain Functions, 8,* 33.

Else-Quest, N. M., Hyde, J. S., & Hejmadi, A. (2008). Mother and child emotions during mathematics homework. *Mathematical Thinking and Learning, 10,* 5-35.

Fidan, E. (2013). *İlkokul öğrencileri için matematik dersi sayılar öğrenme alanında başarı testi geliştirilmesi* [Developing a mathematics achievement test in the field of numbers for primary school students]. Unpublished Master Thesis, Ankara University Institute of Educational Sciences, Ankara.

Furnham, A., & Cheng, H. (2000). Perceived parental behavior, self-esteem and happiness. *Soc. Psychiatry Psychiatr. Epidemiol. 35,* 463–470.

Gunderson, E. A., Ramirez, G., Levine, S. C., & Beilock, S. L. (2012). The role of parents and teachers in the development of gender-related math attitudes. *Sex Roles, 66,* 153-166.

Harari, R. R., Vukovic, R. K., & Bailey, S. P. (2013). Mathematics anxiety in young children: An exploratory study. The *Journal of Experimental Education, 81,* 538-555.

Hatfield, E., Cacioppo, J. T., & Rapson, R. L. (1993). Emotional contagion. *Current Directions in Psychological Science, 2,* 96–99.

Hembree, R. (1990). The nature, effects, and relief of mathematics anxiety. *Journal of Research for Mathematics Education, 21,* 33-46.

Ho, H-Z., Senturk, D., Lam, A. G., Zimmer, J. M., Hong, S., & Okamoto, Y. (2000). The affective and cognitive dimensions of math anxiety: A cross-national study. *Journal for Research in Mathematics Education, 31,* 362-379.

Kellaghan, T., K. Sloane, Alvarez, B., & Bloom, B. (1993). *The home environment and school learning.* San Francisco: Jossey-Bass.

Kesici, A. (2018). Matematik kaygisi ebeveynlerden cocuklara aktarilan kulturel bir miras mi? [Is math anxiety a cultural heritage transferred from parents to children?]. *Dicle University Social Sciences Institute Journal, 10*(20), 304-313.

Ma, X. (1999). A meta-analysis of the relationship between anxiety toward mathematics and achievement in mathematics. *Journal for Research in Mathematics Education, 30,* 520-540.

Macmull, M. S., & Ashkenazi, S. (2019). Math anxiety: The relationship between parenting style and math self-efficacy. *Front. Psychol., 10,* 1721.

Maloney, E. A., Ramirez, G., Gunderson, E. A., Levine, S. C., & Beilock, S. L. (2015). Intergenerational effects of parents' math anxiety on children's math achievement and anxiety. *Psychological Science, 26*(9), 1-9.

Mutlu, Y., & Söylemez, İ. (2017). İlkokul 3. ve 4. sınıf çocukları için matematik kaygı ölçeği; Güvenirlik ve geçerlik çalışması [Mathematic anxiety scale for children of primary 3. and 4. grade: Validity and reliability study]. *Ekev Akademi Dergisi, 22*(73), 429-440.

Mutlu, Y., Sarı, M.H., & Çam, Z. (2018). Ebeveyn matematik kaygısı ölçeği geliştirme çalışması [Development study of parental math anxiety scale]. *Journal of Social Sciences of Mus Alparslan University, 6(STEMES'18),* 139-145. Doi: 10.18506/anemon.463756

Namkung, J. M., Peng, P., & Lin, X. (2019). The relation between mathematics anxiety and mathematics performance among school-aged students: A meta-analysis. *Review of Educational Research, 89,* 459–496.

OECD (2019), *PISA 2018 Results (Volume I): What students know and can do?* PISA, OECD Publishing, Paris, https://doi.org/10.1787/5f07c754-en.

Ozdemir, C. (2016). Equity in the Turkish education system: A multilevel analysis of social background influences on the mathematics performance of 15-year-old students. *European Educational Research Journal, 15,* 193-217.

Parsons, J. E., Adler, T. F., & Kaczala, C. M. (1982). Socialization of achievement attitudes and beliefs: Parental influences. *Child Development, 53,* 310-321.

Recber, S., Isiksal, M., & Koç, Y. (2018). Investigating self-efficacy, anxiety, attitudes and mathematics achievement regarding gender and school type. *Anales de Psicología, 34,* 41-51.

Rubinsten, O., Marciano, H., Eidlin Levy, H., & Daches Cohen, L. (2018). A framework for studying the heterogeneity of risk factors in math anxiety. *Front. Behav. Neurosci., 12,* 291.

Sad, S.N., Kis, A., Demir, M., & Özer, N. (2016). Meta-analysis of the relationship between mathematics anxiety and mathematics achievement. *Pegem Journal of Education & Instruction, 6*(3), 371.

Sarı, M. H., & Ekici, G. (2018). İlkokul 4. sınıf öğrencilerinin matematik başarıları ile aritmetik performanslarını etkileyen duyuşsal değişken-lerin belirlenmesi [Determination of affective variables affecting mathematical achievement and arithmetic performance of primary school 4th grade students]. *OPUS-International Journal of Society Researches, 8*(15), 1562-1594. DOI: 10.26466/opus.451025

Sarı, M. H., Arıkan S., & Yıldızlı, H. (2017). 8. sınıf matematik akademik başarısını yordayan faktörler-TIMSS 2015 [Factors predicting mathematics achievement of 8th graders in TIMSS 2015]. *Journal of Measurement and Evaluation in Education and Psychology, 8*(3), 246-265. Doi: 10.21031/epod.303689

Savaş, E., Taş, S., & Duru, A. (2010). Matematikte öğrenci başarısını etkileyen faktörler [Factors affecting students' achievement in mathematics]. *Inonu University Journal of the Faculty of Education, 11*, 113-132.

Silinskas, G., & Kikas E. (2017) Parental involvement in math homework: Links to children's performance and motivation, *Scandinavian Journal of Educational Research, 63*(1), 17-37, Doi: 10.1080/00313831.2017.1324901

Soni, A., & Kumari, S. (2017). The role of parental math anxiety and math attitude in their children's math achievement. *International Journal of Science and Mathematics Education, 15*(2), 331–347. https://doi.org/10.1007/s10763-015-9687-5.

Srivastava, R. Imam, A., & Singh, G. P. (2016). Mathematics anxiety among secondary school students in relation to gender and parental education. *International Journal of Applied Research, 2,* 787-790.

Szczygieł, M. (2020). When does math anxiety in parents and teachers predict math anxiety and math achievement in elementary school children? The role of gender and grade year. *Social Psychology of Education.* https://doi.org/10.1007/s11218-020-09570-2.

Taşdemir, C. (2015). Ortaokul öğrencilerinin matematik kaygı düzeylerinin incelenmesi [An investigate of the mathematics anxiety levels of secondary students]. *Batman University Journal of Life Sciences, 5,* 1-12.

Tobias, S., & Weissbrod, C. (1980). Anxiety and mathematics – an update. *Harvard Educational Review, 50,* 63-70.

Vukovic, R. K., Roberts, S. O., & Green Wright, L. (2013). From parental involvement to children's mathematical performance: The role of mathematics anxiety. *Early Educ. Dev., 24,* 446–467.

IOJPE

ISSN: 1300 – 915X
www.iojpe.org

International Online Journal of Primary Education *2020, volume 9, issue 1*

INVESTIGATING CLOCK READING SKILLS OF THIRD GRADERS WITH AND WITHOUT DYSCALCULIA RISK

Yılmaz MUTLU
Dr., Mathematics Education, Muş Alparslan University, Turkey
ORCID: https://orcid.org/0000-0002-4265-856X
y.mutlu@alparslan.edu.tr

Ebru KORKMAZ
Dr., Mathematics Education, Muş Alparslan University, Turkey
ORCID: https://orcid.org/0000-0001-6250-3293
eb.korkmaz@alparslan.edu.tr

Received: 05.03.2020 **Accepted:** 17.06.2020 **Published:** 30.06.2020

Abstract

This paper aims to investigate the clock reading skills of third graders with and without dyscalculia risk. Data were collected from 290 (136 girls, 154 boys) third graders from three different primary schools located in the city center of Mus. Of the participants, 29 were at risk of dyscalculia while 261 were normally achieving. The study employed the triangulation method, one of the mixed-method research design patterns. Data collection tools include a mathematics achievement test, a clock-reading test developed by the researchers, and an interview form designed for children who are at risk of dyscalculia. Analysis of data from all participants revealed that there is no significant difference between boys' and girls' mathematics achievements. There is a significant difference in terms of clock reading skills in favor of boys. There is a moderate (.56) relationship between mathematics achievement and clock reading skills, and ability to read clocks explains 31% of the total variance in mathematics achievement. The means of the scores of children with and without dyscalculia risk from the 28-item clock-reading test were 5.45 and 11, respectively. During the interviews with 20 children at risk of dyscalculia, the majority of children (13) were able to draw an analog clock but only 50% of the children were able to draw the given time correctly on the clock. It was also found that most of the children (12) confused hour and minute hands and could not tell why there are 12 numbers on an analog clock while there are 24 hours in a day (average number of correct answers 8). Besides, only four students gave correct answers to the question regarding five-minute intervals. The results indicate that children with and without dyscalculia risk have difficulty reading clocks. Furthermore, our results show that, considering the predictivity of clock reading skills for mathematics achievement, difficulties in reading clocks at an early age can be considered as an early indicator of dyscalculia in children.

Keywords: Dyscalculia, mathematics-learning difficulty, reading clock, analog clock

INTRODUCTION

Dyscalculia is defined as difficulty acquiring basic arithmetic skills that is not explained by low intelligence or inadequate schooling (WHO, 2011). Two hypotheses are proposed for the causes of dyscalculia, with a prevalence in the community ranging from 3% to 6% (Butterworth, 2005): dysfunctional brain regions associated with mathematical skills (Butterworth & Laurillard, 2010, von Aster & Shalev, 2007; Piazza et al., 2010) or working memory deficit (Geary, 2010; Andersson and Östergren, 2012).

Every student with dyscalculia is unique; although not all children exhibit the same difficulty (Desoete & Grégoire, 2006; Dowker, 2009, Gifford & Rockliffe, 2012), some common behavioral features can be observed. Children with dyscalculia have difficulty learning numbers (Geary, 2006); they are inadequate in understanding relationships between numbers (Sharma, 2015) and performing simple arithmetic operations (Shalev et al., 2001); they are slow in performing mathematical operations (Ansari & Karmiloff-Smith, 2002; Geary, 2004); they tend to use the finger counting strategy which their peers have already abandoned (Geary, 1990; Bender & Beller, 2012); they have a poor sense of direction and therefore confuse directions (Williams, 2013). In addition, dyscalculic children experience difficulties reading clocks, which is extremely important for daily life (Anderson, 2008; Burny, Valcke & Desoete, 2012).

A majority of children have difficulty acquiring clock-reading skills (McGuire, 2007; Harris, 2008). The reasons for the difficulties especially in reading analog clocks can be listed as follows: First, although the passage of time is part of human experience, time itself is naturally abstract: it cannot be directly perceived or manipulated (William, 2004). Secondly, it requires the ability to count and calculate (addition, subtraction, multiplication). Individuals who have difficulty counting and calculating most probably have difficulty-reading clocks, as well. Third, unlike physical quantities such as length, weight, volume, and money, to measure time, rather than the decimal numeral system, we use the sexagesimal numeral system that originated with the ancient Sumerians (McGuire, 2007; Burny, Valcke & Desoete, 2012). In this system, an hour is sixty minutes, a minute is sixty seconds, and sixty is divisible by 12, 5, etc. Fourth, the numbers are interpreted differently depending on the hour, minute, and second hands, which may make reading the time difficult. Fifth, understanding the movement of hour and minute hands in the clockwise direction may be difficult especially for children with poor spatial skills (Burny, Valcke, & Desoete, 2012). Considering the causes of difficulties in reading clocks together with the procedural, semantic, and spatial deficiencies of dyscalculic individuals (Geary, 1993), the ability to read clocks can become an obstacle that is very difficult to overcome for most of dyscalculic individuals.

Unlike many other units of measure for length, mass, etc., the unit of time cannot be seen or perceived. Although the passage of time can be measured, time cannot be perceived as something concrete (Hurrel, 2017). In the process of teaching children mathematical concepts, math manipulatives such as geometric blocks, beads, and geoboards are often used. Mathematics educators have long advocated the use of such materials to facilitate concept development in children. However, it is impossible to find concrete examples for direct measurement of time. Even clocks and hourglasses measure the passage of time only indirectly (Burton & Edge, 1985).

For children, reading digital clocks is easier than reading analog clocks. However, this still may not mean that children fully understand what they are reading (Boulton-Lewis, Wilss, & Mutch, 1997; Van de Walle, 2001). For example, to know that 7:58 is about 8, the student needs to know that there are 60 minutes in one hour, 58 is close to 60, and 2 minutes is not a long time. Most first-grade students and many second-grade students do not have this knowledge (Van de Walle, 2001). Besides, it can be said that learning to read digital clocks involves quite different processes compared to learning to read analog clocks. Reading the time in a digital clock (e.g., 13:25) is very similar to reading one and two-digit numbers (e.g., 9, 22) since the hours and minutes are presented as numbers in digital clocks (Friedman and Laycock, 1989). On the other hand, reading the time in an analog clock requires quite complex and different skills.

Digital clocks are more common today, so some kids may think that there is no need to learn the analog clock. However, learning both ways to tell the time is important to be an independent individual (Thompson, Wood, Test & Cease-Cook, 2012). Starting from the first grade, students usually learn to read firstly hours (e.g., 5:00, 6:00, etc.), then half-hours, quarter-hours, and finally minute times (e.g., 5:05, 9:25, etc.) (Van de Walle, 2001).

Acquiring the ability to read clocks requires having many prerequisite skills. In order for students to learn to read clocks, teachers should make sure that they have acquired the prerequisite skills. They should be specific about which part of the task the focus is on and make sure students know it too (Burton & Edge, 1985). Children need to acquire the ability to use words correctly, to put events in the correct order, to predict the time and cyclic events, and to use the information they obtained from reading clocks. In addition, various mathematical knowledge and skills are necessary to acquire clock-reading skills. First, clock-reading skill is based on the number sense and ability to count. Secondly, a basic knowledge of fractions is needed to understand the clock face divided by halves and quarters. Finally, measuring time intervals requires addition and subtraction skills (Burny, Valcke, & Desoete, 2009).

Unlike length or angle, which can be measured by concrete manipulatives, reading the clock should be taught through hypothetical activities and problem solving (McInerney & McInerney, 2002). In addition, some guidelines to help students acquire clock-reading skills include: (1) use experiences that are part of everyday life, (2) set challenging but achievable goals, and (3) use confirmed-approved practices. Remember that the concept of time develops gradually in children. Spreading the teaching of components of this task throughout one school year will reduce the frustration level of both the teacher and the students (Burton & Edge, 1985).

Although clock-reading skill is important to meet our daily needs, it has attracted very little scientific interest (Burny, Valcke, & Desoete, 2012). Moreover, very few studies on clock reading skills have examined these skills with a focus on dyscalculic children (Anderson, 2008; Burny, Valcke, & Desoete, 2012). This paper aims to investigate the analog clock reading skills of third graders who are/are not at risk of dyscalculia. To this end, answers to the following questions were sought.

1. Do third graders's clock reading skills show a statistically significant difference in terms of gender?
2. Is there a significant relationship between third graders' mathematics achievements and clock reading skills?
3. To what extent do third graders' clock reading skills predict their mathematics achievements?
4. What is the level of clock reading skills of third graders who are at risk of dyscalculia?

METHODS

The study employed the triangulation method, one of the mixed-method research design patterns. In data triangulation, qualitative and quantitative methods are used to examine different dimensions related to the research problem. Qualitative and quantitative methods are used for different dimensions of the research. The results obtained for these different dimensions complement each other, resulting in a more comprehensive conclusion regarding the research problem (Greene, Caracelli, & Graham, 1989). The purpose of the triangulation pattern is to use qualitative and quantitative methods together and to diversify, compare, and merge the obtained data, and thus, to obtain various data that is directly related to research questions (Morse, 1991).

Participants

While determining the study group, sequential sampling (quantitative-qualitative) applied in mixed-method research was used. The sequential quantitative-qualitative technique is the most widely used technique in the literature. In this technique, the sample used in the quantitative stage is decisive in determining the study group in the qualitative stage (Baki & Gokcek, 2012).

The study group comprises a total of 290 (136 girls, 154 boys) children from three primary schools located in the city center of Mus, a province in eastern Turkey. Mathematics achievement tests and clock reading tests were applied to three randomly determined classrooms in each of these three schools.

Generally, a score of lower than 20-25% is used as a criterion to determine dyscalculic children (Fletcher, Francis, Morris, & Lyon, 2005; Geary, 2004). While determining the students who are at risk of dyscalculia at the qualitative stage of this study, a score of less than 10% from the mathematics achievement test was taken as a criterion. Of 29 students who met this criterion, a total of 20 (8 girls, 12 boys) were interviewed.

Table 1. Mathematics achievement test scores of children at risk of dyscalculia (Out of 15 points)

Variable	n	Mean
Girl	13	.92
Boy	16	1.56
Total	29	1.27

Data Collection Tool

One of the data collection tools used in the study was the mathematics achievement test consisting of 15 open-ended items developed by Fidan (2013) for primary school third grades. This achievement test was developed based on the learning objectives specified in the 'number learning' learning area of the mathematics curriculum for third grades (Turkish Ministry of National Education [MoNE], 2004). This learning area includes subjects such as counting, number patterns, four operations, and fractions. The KR-20 reliability coefficient of the test was calculated as 0.93. Another data collection tool used in the study was the 28-item Clock Reading Test (CRT) (Annex 1) developed by the researchers to measure third graders' clock reading skills. When developing the CRT, the researchers considered the following learning objective specified in the 'measuring time' sub-learning area of the 'measurement' learning area of primary school mathematics curriculum (MoNE, 2018): "Tells and reads the time in minutes and hours and solves the problems using time measurement units." While developing the test items, the views of three academicians, two mathematics educators and a classroom educator, were taken, and the test items were revised according to their feedback. The KR-20 reliability coefficient of the CRT was calculated as .87.

During the interviews with students at risk of dyscalculia, the questions in Annex 2 were used. In the first question, the children were asked to draw an analog clock. Then, the children were instructed to draw any whole hour on the analog clock. Afterwards, using the analog clocks drawn by the students and other readily available analog clock drawings (for those who were not able to draw a clock), we asked questions developed based on five developmental stages (identification of early impressions of a clock; awareness of the numerals on a clock; awareness of the importance of the twelve numerals; partitioning of the twelve numerals becomes significant; and recognition of minute markers) in regards to children's understanding of the clock identified by Pengelly (1985; cited in Clarke, 1998). Wright (2007) argues that the "drawing-telling" process gives students the opportunity to create and share meaning in two modes. By asking "Tell us about your drawing," children may be provided with an additional opportunity to express their ideas in different but complementary ways. This drawing-telling process has proven to be much more informative and insightful than the drawing process alone.

Data Analysis

Since the skewness and kurtosis values of quantitative data met normality assumptions (Tabachnick, Fidell, & Ullman, 2007) (see Table 2), parametric tests such as t-test, correlation, and regression were used to analyze the data. For the analysis of qualitative data, descriptive analysis was performed, tables were created, and frequencies were calculated.

Table 2. Skewness and kurtosis values of MAT and CRT scores

	N	Mean	Std. Deviation	Skewness	Kurtosis
MATS	290	9.53	4.56	-.508	-.977
CRTS	290	10.43	6.17	.408	-.726

RESULTS

CRT mean scores of children who are/are not at risk of dyscalculia were found to be 5.45 and 11, respectively. In addition, independent sample t-test analysis was performed to determine whether there is a significant difference between boys and girls in terms of CRT scores. The results of the analysis are presented in Table 3.

Table 3. Comparison of MAT and CRT scores by gender

Test	Groups	N	Mean	df	t	*p*
CRT	Girl	136	9.96	5.26	1.222	.000*
	Boy	154	10.85	6.88		

**p<.05*

IOJPE
ISSN: 1300 – 915X
www.iojpe.org
International Online Journal of Primary Education 2020, volume 9, issue 1

As can be inferred from the comparison of CRT scores in terms of gender [t (288) = -1.222, p<.05] as presented in Table 3, there is a significant difference between boys and girls in favor of boys. This suggests that boys performed better in the CRT.

Table 4. The level of predictivity of CRT scores for success in the MAT

	B	SH	Beta	t	p
Constant	5.240	.438		11.952	.000
CRTS	.412	.036	.557	11.386	.000
R= .557	R^2=.310				
$F_{(1.379)}$ = 129.634	p = .000				

The correlation between mathematics achievement test scores and clock reading test scores was calculated as .557. This suggests that there is a moderate relationship between mathematics achievement test scores and clock reading test scores.

Simple linear regression analysis was performed to determine the level of predictivity of CRT scores for MAT scores. As a result, CRT scores explained 31% (R^2 = .310) of the total variance in MAT scores. The equation between MAT scores and CRT scores can be formulated as MATS = 5.240 + (.412) x (CRT).

The next section includes data from the interviews with children at risk of dyscalculia. Codes and categories emerged from the analysis of the data by content analysis.

Table 5. Analysis of correct/incorrect clock drawings

Category	Code	Sample	Frequency
Clock drawing	Correct drawing	S2, S3, S6, S7, S9, S11, S14, S15, S16, S18, S19, S4, S20	13
	Incorrect drawing	S1, S5, S8, S10, S12, S13, S17	7

As can be seen in Table 5, a total of 13 students (e.g., S20, S18) were able to place the numbers on the clock face correctly. On the other hand, 7 students failed to place the numbers on the clock face correctly.

S20 Correct | S18 Can be considered correct | S10 Incorrect drawing | S17 Incorrect drawing

Figure 1. Samples drawings

Table 6. Drawing hands on the clock for the time given

Category	Code	Sample	Frequency
Ability to position hands correctly	Correct	S2, S3, S6, S7, S9, S11, S14, S15, S18, S19	10
	Incorrect	S1, S4, S5, S8, S10, S12, S13, S16, S17, S20	10

The participants' answers to the question of drawing hands for the time given led to two codes: correct drawing and incomplete-incorrect drawing. While 10 students were able to draw the given time correctly, the other 10 students drew either incorrectly or incompletely. Also, three (S4, S16, S20) of the students who were able to draw an analog clock failed to draw the given time correctly.

IOJPE
ISSN: 1300 – 915X
www.iojpe.org
International Online Journal of Primary Education 2020, volume 9, issue 1

S15
4:00-Correct

S19
4:00-Correct

S4
2:00-Incorrect

S13
9:00-Incorrect

Figure 2. Samples drawings

The students were also asked to indicate the hour and minute hands on a given clock face. Their answers and frequencies are demonstrated in Tables 7 and 8. As can be inferred from Table 7, seven students indicated the hour hand correctly, eight incorrectly, and 5 left this question unanswered.

Table 7. Indicating the hour hand

Category	Code	Sample	Frequency
Hour hand	Correct	S3, S7, S8, S11, S14, S18, S19	7
	Incorrect	S1, S4, S5, S6, S15, S16, S17, S20	8
	Unanswered	S2, S9, S10, S12, S13	5

Table 8 presents the students' answers to the question regarding the minute hand. As can be inferred from the table, ten students indicated the minute hand correctly, seven incorrectly, and three left this question unanswered.

Table 8. Answers regarding the minute hand

Category	Code	Sample	Frequency
Minute hand	Correct	S2, S3, S7, S8, S9, S11, S13, S14, S18, S19	10
	Incorrect	S1, S4, S5, S6, S15, S16, S17	7
	Unanswered	S10, S12, S20	3

The researcher's dialogues with S20 and S13 regarding the hour and minute hands are given below.

- Do you know what long and short hands are called? What do we call them?
- One is hour hand but the other, I forgot.
- Is the hour hand long one or short one?
- The long one.
- And what about the short one?
- ……..(S20)
- Do you remember what we call the short hand?
- No
- What about the long one?
- Minute hand (S13)

Table 9. *Answers to the question about five-minute intervals*

Category	Code	Sample	Frequency
Five-minute intervals	Correct	S1, S4, S9, S16	4
	Incorrect	S2, S3, S6, S11, S12, S18, S19, S20	8
	Unanswered	S5, S7, S8, S10, S13, S14, S15, S17	8

The students were asked about the functions of five-minute intervals. The answers are given in Table 9. While four students gave correct answers to this question, eight students gave incorrect answers. In addition, eight students said that they did not know. The researcher's dialogue with S12 is given below.

- You see these intervals between the numbers on the clock face. Do you know what they mean?
- To make sure they are in order.
- To make sure what is in order?
- The numbers like 1, 2.
- So you mean, these intervals are here to make sure the numbers are placed at equal intervals?
- Yes. (S12)

Table 10. Answers to the question, "Indicate one minute past the given time"

Category	Code	Code	Sample	Frequency
1 minute	Correct	Not exactly	S1, S16	2
	Incorrect		S2, S3, S4, S5, S8, S11, S12, S13, S14, S15, S17, S19, S20	13
	I do not know		S6, S7, S9, S10, S18	5

The students were asked to indicate one minute past the given time. The answers are given in Table 10. As can be inferred from Table 10, two students answered this question correctly, thirteen students answered incorrectly, and five students stated that they did not know the answer. The researcher's dialogue with S15 is given below.

- It is four o'clock in this drawing. How would you draw one past four?
- The short hand is on four. And the long hand is on one.
- What about twenty past four?
- We can't say twenty past four. If it is twenty past four, the long hand is on 8.
- Why 8?
- Starting from 12, we stop at eight, and we have 20 left. So the answer is eight past four.
- Excuse me?
- We stopped at 12, 13, 14, 15, 16, 17, 18, 19, 20; the long hand is on 20, and the short hand is on 4. (S15)

Table 12. Answers to the question, "How many minutes are there in an hour?"

Category	Code	Sample	Frequency
How many minutes are there in an hour?	Correct	S4, S5, S16, S20	4
	Incorrect	S1, S2, S6, S8, S15, S17	7
	I do not know	S3, S7, S9, S10, S11, S12, S13, S14, S18, S19	9

The students were asked how many minutes there are in an hour. As can be inferred from Table 12, four students answered the question correctly, seven incorrectly, and nine left the question unanswered. The researcher's dialogue with S17 is given below.

- So how many minutes are there in one hour?
- In one hour…. our teacher taught us but, was it 12 minutes?
- I mean, how many minutes can there be in one hour?
- Our teacher taught us in the second grade but ... I think twelve minutes. (S17)

Table 11. Answers to the question, "How many hours are there in a day?"

Category	Code	Sample	Frequency
How many hours are there in a day?	Correct	S1, S4, S5, S14, S16, S17, S19, S20	8
	Incorrect	S2, S3, S6, S8, S9, S10, S12, S13, S15, S18, S7, S11	12

The students were asked how many hours there are in a day. The answers are given in Table 11. While eight students answered the question correctly, twelve answered incorrectly. The researcher's dialogue with S6 is given below.

- How many hours are there in a day?
- In one day...
- Yes, one day. For example, in the morning, we wake up and go to school. In the evening, we have dinner and go to bed. Then, it is morning again. So, how many hours?
- 2 hours
- So you think a day lasts 2 hours, that is, there are 2 hours in one day?
- No, 3 hours.
- Sorry, did you say 3 hours?
- Yes. (S6)

Table 12. Answers to the question, "Why are there 12 numbers on a clock?

Category	Code	Sample	Frequency
12 numbers on a clock	Correct	S1, S5, S14, S16, S18, S19, S20	7
	Incorrect	S2, S6, S15, S17	4
	I do not know	S3, S4, S7, S8, S9, S10, S11, S12, S13	9

Answers to the question, 'Why are there 12 numbers on a clock?' are given in Table 12. As can be inferred from Table 12, four students answered the question incorrectly, seven correctly, and nine said they did not know.

- Why are there 12 numbers on a clock? Why are these numbers from 1 to 12?
- Because the last number is 12.
- So?
- …….(S6)

DISCUSSION and CONCLUSIONS

Making sense of time through traditional timekeeping devices such as clocks and calendars is an important goal for all primary school children (Burny, Valcke, & Desoete, 2012). The ability to tell the time is an important skill that children develop in preschool years and use throughout their lives (Freedman & Laycock, 1989). The results reported by experimental studies (Case, Sandieson, & Dennis, 1986; Friedman & Laycock, 1989) show that analog clock reading skills develop based on the age of the child. Children's ability to perceive time does not develop as an isolated cognitive competence; this ability is developed based on arithmetic, literacy, memory, and spatial skills (Foreman et al., 2007).

Our findings indicate that the means of the scores of children with and without dyscalculia risk from the 28-item analog clock reading test were 5.45 and 11, respectively. It can be said that the means of the scores of both groups are low. However, the fact that children who are at risk of dyscalculia could answer only approximately 6 items out of 28 items suggests their inability to read clocks. On the other hand, the low scores obtained by both groups from the clock reading test are consistent with the studies reporting how difficult it is for children to develop clock reading skills (McGuire, 2007;

Harris, 2008; Anderson, 2008; Burny, Valcke & Desoete, 2012; Van Steenbrugge, Valcke and Desoete, 2010).

In the study, we found a significant difference between boys' and girls' scores from the clock reading test, which was in favor of boys. In contrast, Vakali (1991) reported no difference between boys and girls in terms of clock reading skills. This inconsistency between the findings may be attributed to the difference in the samples included in the studies.

Also, we obtained a moderate relationship (.56) between mathematics achievement test scores and clock reading test scores and determined that the ability to read analog clocks explains 31% of the total variance in mathematics achievement. Although there is a significant correlation between students' mathematics performance and clock reading skills in every grade of primary school, this correlation is only at a moderate level. Especially when first- and second-grade children are taught how to read analog clocks (whole hours, half-hours, and quarter-hours), the correlation between clock reading skills and mathematics achievement becomes quite weak (Burny, Valcke & Desoete, 2012).

Findings reported by Andersson (2008) indicate that dyscalculic children have significant problems with reading clocks. Similarly, Burny, Valcke, & Desoete (2012) have reported difficulties in reading clocks experienced by dyscalculic children. In the current research, during the interviews with 20 children at risk of dyscalculia, the majority of children (13) were able to draw an analog clock but only 50% of the children were able to draw the given time correctly on the clock. It was also found that most of the children (12) confused hour and minute hands and could not tell why there are 12 numbers on an analog clock while there are 24 hours in a day (average number of correct answers 8). Besides, only four students gave correct answers to the question regarding five-minute intervals. A sequence of time acquisition was proposed based on Case's theory of cognitive development (1985, 1992 cited in Boulton-Lewis, Wills, & Mutch, 1997). This was hour, half-hour, quarter-hour, five-minute, and minute times. This sequence may explain why dyscalculic children perform less successfully in minute times. Considering that dyscalculic children have problems with counting, calculating, conceptual knowledge, and spatial competencies, which are needed to develop clock reading skills (Geary, 2006; Sharma, 2015; Shalev et al., 2001); Sharma, 2015; Shalev et al., 2001), the reasons for dyscalculic children's inability to reading clocks become clear.

In addition, considering that difficulties in reading clocks in early classes can be an early indicator of dyscalculia, classroom teachers may need to pay close attention to the difficulties experienced by six- and seven-year-old children (Burny et al., 2012). In addition, considering the procedural, semantic, and spatial difficulties experienced by dyscalculic children, certain adaptations can be made to make it easier for them to learn to read clocks.

In primary school mathematics education, teachers and students in almost every grade of primary school (Van Steenbrugge, Valcke, & Desoete, 2010) perceive the subject of 'clock reading' as a difficult subject. Therefore, further research is needed to reveal the difficulties experienced by both teachers and students in the subject of clock reading.

REFERENCES

Andersson, U. (2008). Mathematical competencies in children with different types of learning difficulties. *Journal of Educational Psychology, 100*(1), 48-66.

Andersson, U., & Östergren, R. (2012). Number magnitude processing and basic cognitive functions in children with mathematical learning disabilities. *Learning and Individual Differences, 22*(6), 701-714.

Ansari, D., & Karmiloff-Smith, A. (2002). Atypical trajectories of number development: A neuroconstructivist perspective. *Trends in cognitive sciences, 6*(12), 511-516.

Baki, A., & Gökçek, T. (2012). Karma yöntem araştırmalarına genel bir bakış [A general overview of mixed method researches]. *Electronic Journal of Social Sciences, 11*(42), 1-21.

Bender, A. & Beller, S. (2012). Nature and culture of finger counting: Diversity and representational effects of an embodied cognitive tool. *Cognition, 124*(2), 156- 182. https://doi.org/10.1016/j.cognition.2012.05.005

Boulton-Lewis, G., Wilss, L., & Mutch, S. (1997). Analysis of primary school children's abilities and strategies for reading and recording time from analogue and digital clocks. *Mathematics Education Research Journal, 9*(2), 136-151.

Burton, G., & Edge, D. (1985). Helping children develop a concept of time. *School Science and Mathematics*, *85*(2), 109-120.

Burny, E., Valcke, M., & Desoete, A. (2009). Towards an agenda for studying learning and instruction focusing on time-related competences in children. *Educational Studies*, *35*(5), 481-492.

Burny, E., Valcke, M., & Desoete, A. (2012). Clock reading: An underestimated topic in children with mathematics difficulties. *Journal of Learning Disabilities*, *45*(4), 351-360.

Butterworth, B. (2005). *Developmental dyscalculia*. In J. I. D. Campbell (Ed.), Handbook of Mathematical Cognition. (pp.455-468). New York: Psychology Press.

Butterworth, B., & Laurillard, D. (2010). Low numeracy and dyscalculia: Identification and intervention. *ZDM Mathematics Education, 42*, 527–539.

Case, R., Sandieson, K., & Dennis, S. (1986). Two cognitive-developmental approaches to the design of remedial instruction. *Cognitive Development, 1*, 293-333.

Clarke, D. (1998). Children's understanding of the clock in the digital age. *Primary Educator*, *4*(3), 9–12.

Dowker, A. (2009). What works for children with mathematical difficulties? The effectiveness of intervention schemes. Research Report RR554. DfES Publications.

Desoete, A., & Grégoire, J. (2006). Numerical competence in young children and in children with mathematics learning disabilities. *Learning and Individual Differences, 16*(4), 351-367.

Foreman, N., Boyd-Davis, S., Moar, M., Korallo, L., & Chappell, E. (2008). Can virtual environments enhance the learning of historical chronology?. *Instructional Science*, *36*(2), 155-173.

Friedman, W., & Laycock, F. (1989). Children's analog and digital clock knowledge. *Child Development, 60*, 357-371.

Fletcher, J. M., Francis, D. J., Morris, R. D., & Lyon, G. R. (2005). Evidence-based assessment of learning disabilities in children and adolescents. *Journal of Clinical Child and Adolescent Psychology*, *34*(3), 506-522.

Friedman, W. J., & Laycock, F. (1989). Children's analog and digital clock knowledge. *Child Development, 60*, 357-371.

Geary, D. C. (1990). A componential analysis of an early learning deficit in mathematics. *Journal of experimental child psychology*, 49(3), 363-383.

Geary, D. C. (1993). Mathematical disabilities: Cognitive, neuropsychological, and genetic components. *Psychological Bulletin*, *114*(2), 345.

Geary, D.C. (2004). Mathematics and learning disabilities. *Journal of Learning Disabilities*, *37*(1), 4-15.

Geary, D. C., & Hoard, M. K. (2005). Learning disabilities in arithmetic and mathematics: Theoretical and empirical perspectives. In J. I. D. Campbell (Ed.), Handbook of mathematical cognition (pp. 253-267). New York: Psychology Press

Geary, D. C. (2006). Dyscalculia at an early age: Characteristics and potential influence on socio-emotional development. *Encyclopedia on Early Childhood Development*, *15*, 1-4.

Geary, D.C. (2010). Mathematical disabilities: Reflections on cognitive, neuropsychological and genetic components. *Learning and Individual Differences*, *20*(2), 130–133.

Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational Evaluation and Policy Analysis*, *11*(3), 255-274.

Harris, S. (2008). It's about time: Difficulties in developing time concepts. *Australian Primary Mathematics Classroom, 13*(1), 28-31.

Hurrell, D. (2017). Is it time to start reconsidering the teaching of time? *Australian Primary Mathematics Classroom, 22*(3), 33.

McGuire, L. (2007). Time after time: What is so tricky about time? *Australian Primary Mathematics Classroom*, *12*(2), 30-32.

McInerney, D. M. & McInerney, V. (2002). *Educational psychology: Constructing learning*. Sydney: Pearson Education.

Morse, J. M. (1991). Strategies for sampling. *Qualitative nursing research: A contemporary dialogue*, 127-145.

Piazza, M., Facoetti, A., Trussardi, A. N., Berteletti, I., Conte, S., Lucangeli, D., & Zorzi, M. (2010). Developmental trajectory of number acuity reveals a severe impairment in developmental dyscalculia. *Cognition*, *116*(1), 33-41.

Shalev, R. S., Manor, O., Kerem, B., Ayali, M., Badichi, N., Friedlander, Y., & Gross-Tsur, V. (2001). Developmental dyscalculia is a familial learning disability. *Journal of learning disabilities*, *34*(1), 59-65.

Sharma, M. C. (2015). A window into dyscalculia and other mathematics difficulties. *The Routledge international handbook of dyscalculia and mathematical learning difficulties*, 277.

Tabachnick, B. G., Fidell, L. S., & Ullman, J. B. (2007). *Using multivariate statistics* (Vol. 5). Boston, MA: Pearson.

Thompson, J.; Wood, C. L.; Test, D. W.; & Cease-Cook, J. (2012). Effects of Direct Instruction on telling time by students with autism. *Journal of Direct Instruction*, *12*, 1-12.

Van de Walle, J. A. (2001). *Elementary and middle school mathematics: Teaching developmentally*. New York: Longman.

Vakali, M. (1991). Clock time in seven to ten-year-old children. *European Journal of Psychology of Education*, *6*(3), 325.

Van Steenbrugge, H., Valcke, M., & Desoete, A. (2010). Mathematics learning difficulties in primary education: Teachers' professional knowledge and the use of commercially available learning packages. *Educational Studies*, *36*, CP3-71. doi:10.1080/ 03055690903148639.

von Aster, M. G., & Shalev, R. S. (2007). Number development and developmental dyscalculia. *Developmental Medicine & Child Neurology*, *49*(11), 868-873.

World Health Organization (WHO). (2011). WHO classifications F81.2 Specific disorder of Arithmetic skills. Retrieved June 9, 2011, from http://who.int/classifications/icd/en/ bluebook.pdf

Williams, R. F. (2004). Making meaning from a clock. Ph. D Dissertation, University of California.

Williams, A. (2013). A teacher's perspective of dyscalculia: Who counts? An interdisciplinary overview. *Australian Journal of Learning Difficulties*, 18(1), 1-16.

Wright, S. (2007). Graphic-narrative play: Young children's authoring through drawing and telling. *International Journal of Education and the Arts*, *8*(8), 1–28.

IOJPE
ISSN: 1300 – 915X
www.iojpe.org
International Online Journal of Primary Education 2020, volume 9, issue 1

Annex 1. Clock Reading Test

1.Write the time under each clock as shown in the example.


09 : 00


:


:


:


:


:

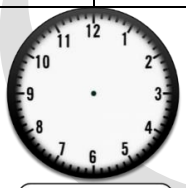
2. Draw the hands on each clock according to the given times.


05 : 00


22 : 00


02 : 30


04 : 45


08 : 00


15 : 15

3. Draw the hands on each clock according to the times given in words.


It is a quarter to nine o'clock.


It is three o'clock.


It is half past four.


It is a quarter past six.

4.Write in words the times given in each clock.

IOJPE
ISSN: 1300 – 915X
www.iojpe.org
International Online Journal of Primary Education 2020, volume 9, issue 1

 ……..	18 : 15 ……
 ……	09 : 30 ……
 ……	15 : 45 ……

5.What time is it in the first clock? In the second clock, draw the hands according to 2 hours past the time given in the first clock.

First Clock 

Second Clock 

6. What time is it in the first clock? In the second clock, draw the hands according to 3 hours to the time given in the first clock.

FirstClock 

Second Clock 

7. A football match that started at 09.00 lasted 3 hours. What time did the match finish?

Write your answer in the box.

8. A movie started at 21:00 and lasted 2 hours. What time did the movie finish?

9. A play started at 13:30 and finished at 15:15. How long did the play last?

10. If the hour hand is close to 7 and the minute hand is on 9, what time is it?
11. Yusuf sleeps 9 hours a day. What time does he need to go to bed to get up at 6 o'clock in the morning?

Annex 2. Interview Questions

Item	Question
1	Can you draw an analog clock?
2	Which one is the hour hand?
3	Which one is the minute hand?
4	Five minute intervals
5	Indicate one minute past the given time
6	How many hours are there in a day?
7	How many minutes are there in an hour?
8	Why are there 12 numbers on a clock?

IOJPE

ISSN: 1300 – 915X
www.iojpe.org

International Online Journal of Primary Education *2020, volume 9, issue 1*

SLOWMATION EXPERIENCES OF PRE-SERVICE TEACHERS VIA DISTANCE EDUCATION DURING THE COVID-19 PANDEMIC DISEASE

Fatih Mehmet CİĞERCİ
Assist. Prof. Dr., Harran University, Faculty of Education, Department of Primary Education, Şanlıurfa, Turkey
ORCID: https://orcid.org/0000-0002-4175-7048
fatihcigerci@gmail.com

Received: 19.04.2020 **Accepted:** 16.06.2020 **Published:** 30.06.2020

Abstract

The unexpected outbreak of Covid-19 pandemic disease has affected every field of life, especially education. The closure of schools and universities to prevent the spread of the disease has led the countries to take urgent decisions on education. Almost all over the world, the education is being conducted through distance education. This study based on the basic qualitative research design aims to examine the opinions of primary education pre-service teachers on their slowmation experiences via distance education. The data of the study were collected with an interview form and analyzed by using descriptive analysis technique under the predetermined themes. As a result of the data analysis, the following results were obtained: The pre-service teachers were of the opinion that slowmation is an advantageous method. However, it was also found that during the process of producing slow motion animations, the participants faced some difficulties. Despite the difficulties, the pre-service teachers believed that slowmations produced by students and/or teachers could be used easily and effectively in their future career. Finally, it was determined that Covid-19 had some negative effects on the mood of the pre-service teachers and it also affected the opinions of the pre-service teachers on the delivery of instruction.

Keywords: Slowmation, Turkish language teaching course, pre-service teachers, Covid-19, distance education, 21st century skills

INTRODUCTION

The world is now passing through a remarkable crisis, Covid-19, which emerged in Wuhan Province of China in December 2019 and has influenced the whole world, affecting all policies of countries, especially economy, health and education. The event has led the authorities to take radical precautions and decisions regarding education and to take steps to carry on education. This unpredictable event has made it compulsory to carry out teaching and learning activities due to lockdowns via distance education almost all over the world. In Turkey, the first case was seen at the beginning of March 2020 and after that, the government, depending on the recommendations of the science committee, closed schools on the second week of March temporarily and since March 23, all the students from primary to high schools have been receiving online education through internet and TV. Universities, on the other hand, suspended education on March 16 for three weeks and later, they also began to carry on education through distance education.

The effects of Covid-19 has begun to take its place in researches and reports. According to a report by UNESCO (2020), the closure of schools has impacted almost 90% of the world's student population (over 1.57 billion) and at least 63 million primary and secondary teachers. Another group which has been affected by the pandemic is pre-service or future teachers. Now in Turkey and many other countries, they do not have access face-to-face tutorials and in-person supervision at teacher training institutions. They have also lost the chance of practical teaching experience in primary, secondary and high schools. Also, they lost the chance of having micro-teaching experiences which is an important part of teacher training programs in face-to-face education. The report also emphasizes that before the crisis, the world was facing a shortage of qualified and trained teachers with an estimated 69 million new teachers needed all over the world to meet the demand of primary and secondary education by 2030. Along with this pandemic disease, this new situation emerging in education has revealed that teachers and students should develop many skills, especially knowledge, technology and media skills and that authorities must find solutions to sustain and nurture both in-service teachers and pre-service teachers' professional network between teachers at education institutions. The report by UNESCO

(2020) strongly points out that both future teachers and in-service teachers are in need of reform and that they should feel comfortable with the technology to perform the full benefits of the training. However, huge number of teachers lack even the most basic ICT skills (World Education Blog, 2020), which is a great obstacle for their professional development urgently needed at the time of Covid-19 crisis. Therefore, as noted by the studies and reports by some institutions like UNESCO, educators and schools should build an understanding of e-readiness and we must perform a reform on modernizing teacher education programs and bring pedagogical innovation and teachers should have pedagogy for ICTs use and digital literacy. According to Brasnford, Brown and Cocking (2000, cited by Hoban, Macdonald & Ferry, 2009), technology is a powerful tool for learning as it helps us to have a deeper understanding of phenomena as long as we build and manipulate models of these phenomena.

In fact, it is not only Covid-19 that has changed the nature of education. The 21st century itself can be said to have brought a new educational understandings, definitions and requirements, which are all now to be considered carefully with Covid-19. 21st century, which is called as the age of information and technology, has had its impact on education as in all areas of life. The definitions of education, student, teacher, class and school have changed. Teaching-learning processes are no longer just the activities that are carried out in the classroom. Teachers are expected to convey information, be a source of information and do their job of teaching, but they are expected to guide their students' development, and offer opportunities for them to carry out their own learning. In addition, teachers are also expected to have 21st century skills (Partnership for 21st Century Skills, P21, 2015) like life and career, learning and innovation, knowledge, media and technology skills, and to further their personal and professional development. On the other hand, students are also expected to be individuals with the 21st century skills and to have creative, critical, problem-solving skills, adapting themselves to innovations, addressing their own learning problems, reaching reliable and different sources of information.

In today's world individuals' being familiar with the emerging technologies begins at the very early ages; for this reason, we can call the generations of this century as digital learners (Han, Shin & Ko, 2017). The needs and interests of these digital learners are quite different from the previous ones. In order to meet the needs of these students and also the educational needs arising from either positive or negative events to be experienced in the future, the education and teaching programs for pre-service and training of in-service and teacher candidates should be in accord with requirements of the century (Ciğerci, 2020).

Previous studies on pre-service teachers' use of technology concluded that technology had little attention in pre-service education programs (Chien, Chang, Yeh, & Chang, 2012; Dawson, 2008; Kirschner & Selinger, 2003; Kurt, 2012) and only a limited number of beginning teachers could use technology in various ways in education settings (Bang & Luft, 2013; Gao, Wong, Choy, & Wu, 2011) and except the basic information and technology lesson, pre-service teachers did not have education on the use of technology for educational purposes like preparing teaching and learning materials, instructing, engaging their students into the activities, etc. (Göktaş, Yıldırım & Yıldırım, 2009; Han & Shin, 2011; Russell, Bebell, O'Dwyer & O'Connor, 2003, Tearle and Golder, 2008). However, these situations have changed in a positive manner in recent years as the faculties of education have begun to revise their programs by including both compulsory and elective courses on basic ICT skills, instructional technologies, distance education, etc. Besides, in order to equip their pre and in-service teachers with the requirements of 21st century, the ministry of education in countries provide training programs on information, technology and media literacy. In Turkey, for instance, the Higher Education Council revised all of the teacher education programs in 2018 and in addition to information technologies course, various compulsory and elective courses such as teaching technologies course, distance education, media literacy, the implementation of science in technology were included in programs. Other studies also emphasize that teacher standards to meet the needs of today's' educational understanding should be described (Orhan, Kurt, Ozan, Som Vural, & Türkan,

2015) and the standards and the technology education for pre-service teachers should focus on the use of educational technologies depending on pedagogical and content knowledge (Karatas, 2014). This means that any education programs on technology for pre-service teachers should be able to combine pedagogical practices, technology skill and content knowledge together.

International Society for Technology in Education (ISTE, 2017) lists 7 standards for teachers: learner, leader, citizen, collaborator, designer, facilitator and analyst. As a learner, teachers should "*set professional learning goals to explore and apply pedagogical approaches made possible by technology and reflect on their effectiveness*." As a leader, teachers should "m*odel for colleagues the identification, exploration, evaluation, curation and adoption of new digital resources and tools for learning."* As a collaborator teacher should "*collaborate and co-learn with students to discover and use new digital resources and diagnose and troubleshoot technology issues*." As a designer, teachers should "*use technology to create, adapt and personalize learning experiences, design authentic learning activities and use digital tools and resources to maximize active, deep learning and explore and apply instructional design principles to create innovative digital learning environments that engage and support learning."* As a facilitator, teachers should "*manage the use of technology and student learning strategies in digital platforms, virtual environments, hands-on makerspaces or in the field*" and finally, as an analyst, teachers should "*use technology to design and implement a variety of formative and summative assessments that accommodate learner needs, provide timely feedback to students and inform instruction*." As we can see under each standard, there are sub-standards on the use of technology.

There are many ways, methods and technological tools which enable teachers and students to produce their own digital teaching and learning products. One of the ways of integrating technological and digital opportunities into education is “slowmation”. According to Hoban and Nielsen (2010), the advancement in digital technologies make it possible for pre-service teachers to produce their own media products like videos, digital stories and animations. Moreover, Chan and Black (2005) argue that animations are mostly produced by experts and thus, learners use them as consumers. However, if the learners designed and produced their own animations, the limited impact of animations on education would get higher.

Slowmation (Slow Motion Animation)

The slow-motion animation (slowmation) method was introduced in 2005 by Garry F. Hoban, a professor at Wollongong University. The term "slowmation" is abbreviated from "slow motion animation" and it is a new form of stop-motion animation making it easier to make complicated process of creating animations (Hoban, 2005; 2007). Creating a slowmation involves integrating features of clay animation, object animation and digital storytelling (Hoban &Nielsen, 2010). The most important feature of slowmation is that there are two frames, not 24 frames per second as in computer animation (Hoban, 2007). The first application of the slowmation technique was put into practice by making models from paper or other materials, then creating digital photographs that show the small sequential movements of 18 models to obtain an animation effect and placing them in the digital video program (Kervin, 2007). This technique, which simplifies students' ability to make animation, is a new teaching method created against the complexity of digital animations (Kidman, 2015; Vratulis, Clarke, Hoban & Erickson, 2011; Uzun, 2015).

Slowmations, which are 3-4 minutes in length, are like mini movies and can easily be created by pre-service teachers to present their own understanding on concepts in a more comprehensive way (Hoban & Ferry, 2006).

Hoban and Nielsen (2010) developed the 5R technique in creating slowmation.

Step 1: Background Notes: Students must have enough prior knowledge to explain a concept or design an animation. This situation is resolved by research on the subject or by teachers.

Step 2: Storyboard: Students should create their animation by drawing on a piece of paper in the form

of a draft. This can be a narrative or a pictorial sketch. The concept is broken into several scenes which are to be sequenced to bring expected actions into a coherent story.

Step 3: Models: The draft with a storyboard is formed into 2D or 3D models with play dough, cardboard or colored paper. In this way, abstract concepts are made concrete and implemented. At this point, necessary help can be obtained from books, the internet and teachers.

Step 4: Digital Photographs: The models are animated according to the content of the subject to be explained and photographed with a digital camera. Photographing should be done in the order in the storyboard draft. It is advisable that students have a digital still camera mounted on a tripod looking vertically down at the models or across at the plastic models.

Step 5: The Animation: The photos obtained with the digital camera are animated with the help of a computer and animation is created. Finally, the scientific accuracy of the animations is examined by content specialists. The animations can be shared on the Internet and they can be discussed by peers, teachers and field experts.

Hoban, Ferry, Konza and Vialle (2007) state that the purpose of the slowmation is to explain a science concept and the prompts are to explain the scientific concept like audio narration, music, humor, models, labels, etc., while they also state that claymation's purpose is to tell a narrative and the pedagogical prompt of the clay mation is the experience of the art of telling a story. In this context, most of the studies based on slowmation method in literature are on science teaching. However, in this study, it was preferred to make animations based on slowmation method instead of claymation method in Turkish language teaching course with primary school pre-service teachers. As Hoban and Nielsen (2010) stated, the use of claymation in school classrooms are rare and it is time consuming, tiring and boring to make clay models. Besides, in a study by Murtagh (2004) to increase participation of the students with low achievements by using claymation method, it was found out that though there were positive results of the method, claymation process was time consuming and challenging and that it was hard to preserve clay models after sometime as they get dried.

In this study slowmation method was preferred to be used in Turkish language teaching, especially in listening and viewing skill activities although Hoban, Ferry, Konza and Vialle (2007) stated that slowmation animations are effective in teaching abstract concepts in science teaching, while claymation animations can be used narration and sharing the experiences through narratives.

The aim of this study is to examine the opinions of pre-service teachers on their slowmation experiences via distance education. The fact that slowmation method was used in the study and that there are not any studies on the use of the method in language art lessons is thought to increase the importance of the study and thus, the study will contribute to the related literature.

METHODS

Research Design

This study, aiming to determine the opinions of teacher candidates about their slowmation experiences and what meaning they get form these experiences, is based on the basic qualitative research design. The reason to use basic qualitative research design is that the design gives answer to such questions as how people interpret and attribute to their experiences, how they construct their worlds (Merriam, 2009).

Participants

The participants of the study are pre-service teachers (2nd and 3rd grade) at primary education department in the spring semester of 2019-2020 academic year and attend the Turkish Language Teaching course. The total number of the pre-service teachers attending the course is 103 in two sections. As the researcher of this study is also the lecturer of the course, the first sampling method was based on convenience sampling. Within the context of the syllabus of the course, all the students (pre-service teachers) are required to prepare lesson plans, activities and teaching materials in one of

the language skills (listening and viewing, speaking, reading and writing) and are expected to perform micro-teaching. 17 pre-service teachers preferred listening and viewing skills and 15 of them (7 males, 8 females) wanted to participate in the research voluntarily, which means that the participants selected themselves (self-selected sample, Connaway and Radford, 2017) for inclusion in the study.

Data Collection

In this study, which aims to determine the opinions of pre-service teachers about their slowmation experiences, the data was collected through semi-structured interviews with pre-service teachers based on the interview method frequently used in qualitative research methods. During the interview consisting of semi-structured questions, researchers can add questions according to the new situations likely to arise, and this type of interview is frequently used in research in the field of education due to its flexibility to add questions (DiCicco-Bloom & Crabtree, 2006).

The draft interview form, which was developed after the literature review of the research topic by the researcher, was presented to the opinions of the two experts (one in the department of educational measurement and evaluation and one in primary education). For the content validity of the interview form, a pilot interview was held with two other students who took Turkish teaching course in previous semester and used digital storytelling method and produced digital stories. Depending on the pilot study, the final form was obtained by making necessary revisions on the questions like instead of asking "what do you think about your experience during the pandemic disease?", the question was revised as "How do you feel about your slowmation experience via distance education due to Covid-19?"

The final interview form consisted of four main questions aiming to get the opinions of the participants' opinions on;

- ✓ the advantages and what they liked about slowmation (if any),
- ✓ disadvantages and what they did not like about slowmation or what they found difficult to cope with during the process (if any),
- ✓ how they can make use of slowmation in their future teaching career.
- ✓ their slowmation experiences via distance education due to Covid-19.

Data Analysis

The data gathered from the interviews were analyzed using the descriptive analysis technique. The features of the descriptive analysis are to summarize and interpret the data gathered through different data collection tools and techniques depending on pre-determined themes. While presenting the findings, the researcher can often give direct quotations from what the participants have said with the aim of presenting the opinions of the participants interviewed or observed. The findings obtained through the analysis are presented to the readers in a summarized and interpreted way (Yıldırım & Şimşek, 2011).

In this study, each of the questions asked to the participants were determined as the themes. In order to give direct quotations from the words of the participants, each was assigned a code like P1 (participant 1), P2.

In the study based on the basic qualitative research design, the descriptive analysis was considered to be appropriate in data analysis as the aim was to determine the experiences of the participants. In descriptive analysis, the data are analyzed in four stages (Yıldırım & Şimşek, 2011): The first stage is to examine the data and establish a conceptual framework and try to identify themes. The second stage is the processing of data according to the thematic framework created. The third stage is to identify the findings and make direct quotations. The fourth stage is the interpretation of the findings through the disclosure, correlation and interpretation of the findings.

In this study, interview questions were prepared in a way to form a conceptual framework for evaluating pre-service teachers' slowmation experiences from different perspectives and research

questions were determined as main themes. Therefore, a thematic framework for data analysis was formed based on the interview questions. After the conceptual framework was created, the data obtained from each research question was coded separately by the researcher and an outside researcher in measurement and evaluation department. Based on this coding, sub-themes for the previously determined themes were created. The consensus was achieved by comparing the individual coding made by the two researchers. There was a consensus on 32 codes out of 35 codes between the researcher and outside researcher. By applying Miles & Huberman (1994) intercoder reliability formula (32/(32+3)), the reliability rate was found to be .91. For the three codes that cannot be reached on consensus, consensus was achieved by applying to another expert in primary education department. After these procedures, the stage of identifying the findings was initiated.

In order to ensure internal validity in the research, direct quotations were made from the answers given by the pre-service teachers to the questions. In order to ensure the external validity of the research, the preparation of the data collection tool, application of the data tool and analysis stages are explained in detail. The findings were compared with the findings obtained in the literature.

Research Process

For this study, at the beginning of the semester (February, 2020) the researcher, also the lecturer of the course, gave his lectures on Turkish Language Teaching Program for primary school students prepared by the Ministry of National Education (2019), teaching language skills (listening and viewing, speaking, reading, writing) for the first six weeks. During these lectures, each student was required to choose one of the language skills or language areas for which he/she was to prepare lesson plans, activities and do micro-teaching depending on his/her lesson plans. The researcher also announced the students that he would make a research on the use of technology in teaching listening and viewing. He gave a notice to the students asking them to participate and give certain information in the research.

At the fifth week of the semester, the researcher held a meeting with those who were willing to prepare lesson plans and activities on listening and viewing skills. The researcher, taking necessary permission from the administration of the education faculty, gave detailed information about the research. Those 15 students out of 17 accepted to participate in the study voluntarily. The study lasted for seven weeks beginning form the fifth to eleventh week of the semester. At the fifth and sixth week of the semester, the lecturer held workshops on slowmation with the participants, during which they gained theoretical framework of what slowmation is, what the phases of preparing slow motion animations and how they could adapt their animations with the goals of listening and viewing skills listed in Turkish teaching program for the third and fourth grade primary school students. Also, during the workshops a sample slow motion animation was created by the participants together. However, with the decision of the Turkish government and Higher Education Council, the universities were closed and the education was carried out via distance education (online and offline).

During the lockdown, the participants continued their studies on slowmation at home and the researcher and the participants carried out the stages of slowmation on distance learning platforms such as Edmodo, zoom, etc. The participants used software programs or applications such as Stop Motion, Youcut Video Editor, UnShot, Viva Video, iMovie and shared their products on Edmodo, Whatsapp and/or Google drive. The researcher and the participants made comments on the animations. The final products, the slow motion animations, prepared on the themes like art, national culture, health and sport, nature and universe, science and technology, emotions, time and space, the world of children listed in the 3rd and 4th grade primary education Turkish teaching program (2019), were shared on the third and fourth weeks of April on Edmodo and Google Drive. The researcher sent all participants an interview form via e-mail in which there were four questions answered in detail by the participants.

IOJPE
ISSN: 1300 – 915X
www.iojpe.org
International Online Journal of Primary Education 2020, volume 9, issue 1

FINDINGS

1. The findings on advantages of slowmation experiences

The opinions of the teacher candidates about the advantages of slowmation include "skill development" and "teaching and learning environment" sub-themes. In the following table, themes, sub-themes, codes and quotations from the interviews are given (Table 1).

Table 1. Themes, sub-themes, codes and quotations on the advantages of slowmation

1st Theme: Advantages of Slowmation			
Sub-themes	**Codes**	**F**	**Sample quotations**
Skills Development	21st century skills (learning-innovation skills, and information, media and technology skills)	15	*You write a text or a story, you use an application, you use technology and multimedia and you yourself produce something new, which is great for me (P5).* *This was a new experience for me, and I tried this for the first time in my life. Despite some difficulties, I searched for information on the internet, for example on how to use an application and how to make something new by using the technology (P10).*
	Creative writing	1	*Writing the stories for our animations, thinking about the events, characters, setting all develop creative writing (P8).*
Teaching-Learning Environment	Amusing and pleasant	5	*... enjoyable and amusing, easy to handle the process and produce animations (P14)*
	Permanent learning	4	*... and it also leads to permanent learning (P6).*
	Achieving the objectives of a lesson	1	*we can reach the objectives and aims of a lesson (P11).*
	Healthy relationships between students and teachers	1	*It also enables permanent learning and healthy relations between teachers and students (P3)*

According to findings of the study, the participants were of the opinion that the experience of producing animations will be very helpful for them as they will be teachers in the near future and that this experience contributed to them in various ways. The most remarkable benefit of the experience was found to be the contribution of slowmation to the development of 21st century skills (Partnership for 21st century learning, P21, 2015) of the participants like learning and innovation skills (creativity, critical thinking and problem solving) and information, media and technology skills (accessing, evaluating and using information, creating media products, applying technology effectively). Almost all of the participants believe that as it was their first experience with making animations, they searched for information from various information resources, learned how to use a software program or an application, gained new knowledge, developed and used their creative thinking, problem solving and production skills, turning a written text into an audio visual product by using different multimedia and technology tools, and developed solutions on how to make and teach abstract concepts in Turkish teaching and also other lessons in a more concrete way. All these skills are included in 21st century skills.

Besides the impact of slowmation on skill development, the participants stated that the experience of slowmation in teaching and learning environment would create an amusing and pleasant atmosphere

and that it was key to permanent learning. While one participant thought that the objectives of a lesson could be achieved by slowmation, another one believed that slowmation experiences could build healthy relationships between teachers and students.

2. The findings on disadvantages/difficulties of slowmation

The opinions of the teacher candidates about the disadvantages/difficulties of slowmation include "process" and "equipment and material" sub-themes. In the following table themes, sub-themes, codes and quotations from the interviews are given (Table 2).

Table 2. Themes, sub-themes, codes and quotations on the disadvantages/difficulties of slowmation

2nd Theme: Disadvantages/Difficulties of Slowmation			
Sub-themes	**Codes**	**f**	**Sample quotations**
Process	Taking so many photos	7	*After writing the story and arranging drawings, materials ect, I had to take photos. I can't remember how many photos I had taken as. But I know for sure that I took so many photos (P7).*
	Voice recording	6	*Voice recording took my time as I tired many times to arrange my voice and tone (P11).* *I had to record my voice for a few times as I thought that I was not able to give the mood of the story (P15).*
	Application/software	5	*I had difficulty in using the application on my mobile phone. I had to do some stages ever and ever again (P1).*
	Arranging the speed of the video	3	*It was difficult to adapt the time and duration of voice recording with the time and duration of the animation (11).*
	Time consuming	2	*The process is very demanding and take so long time. You must arrange many things and you have to have control over them (P4).*
	Story writing	1	*Writing my own story was stressful and hard. There are many factors that we had to consider; the level of the students, the language, the length of the story etc. (P5).*
	Storyboard	1	*I wish we had not had to make a storyboard for our animations. It was difficult to make it (P10).*
	Creating setting	1	*I wrote my story. Ok but while making my animation, I had difficulty in creating the setting. I had to go over it several times (P5).*
Equipment & Material	Using mobile phones	8	*It was difficult to hold the mobile phone fixed while going over the pictures (P2).* *it was really very difficult to hold the mobile phone on the right hand and change the pictures or scenes with the left hand (P9).*
	Lack of material	4	*I had some difficulties. I live in a village and most of the time my internet connection is not good. Because of Covid, we must stay at home, and we cannot go out, so I could not get some necessary materials for my animation (P1).*

When the answers of participants were analyzed, it was found out that the participants underlined some certain difficulties/disadvantages during the process of producing slow motion animations. The most common problems were determined to be due to the use of mobile phones, voice recording, the

need of materials, taking so many photos. There were also other problems such as writing the story, arranging the storyboard, arranging the speed of the video, using the slowmation applications or software programs and creating the setting.

While some of the participants also stated that they were in need of materials and equipment to use as models and could not get them easily as they had to stay at home because of Covid-19 and that they tried to overcome this difficulty by trying to make use of the materials they had at home, some of the participants stated that all the five steps of producing slowmation was time consuming as they had to decide and arrange many things at the same time.

3. Findings on the use of slowmation by pre-service teachers in their future career

The opinions of the teacher candidates about the use of slowmation by in future career include "contributions of slowmation to the students", "using slowmation in various disciplines", "philosophy" and "economy" sub-themes. In the following table themes, sub-themes, codes and quotations from the interviews are given (Table 3).

Table 3. Themes, sub-themes, codes and quotations on the use of slowmation by pre-service teachers in their future career

3rd Theme: Use of Slowmation by Pre-service Teachers in Their Future Career			
Sub-themes	**Codes**	**f**	**Sample quotations**
Contributions of Slowmation Process to the Students	21st century skills (learning-innovation skills, and information, media and technology skills, social skills)	13	*Think of my students, they are making their own animations. They will use their creativity by writing their own stories. They will search for information. They will use technology. They will solve the problems when they face them. Maybe they will work together (P6).*
	Language skills	9	*The process itself develops the language skills. You write stories and then you read them again and again. Even you ask another person to read it aloud and you listen to your story. Then when the animation is ready the students listen and watch. By this way, my students will develop their language skills (P8).*
	Psychomotor skills	1	*…. their psychomotor skills will also develop as they will draw pictures, use various materials (P11).*
	Attention/interest	1	*I will be able to keep my students' attention and interest in my lessons (P5).*
	Learning by doing	1	*… And at the same time, students will have fun and do a pleasant activity. They will learn better by doing (P12).*
	Collaboration/cooperation	1	*For instance, I can make up the story and narrate it and my students can draw pictures for the story and they can express their thoughts with their drawings. Then, they can do the voice recording, find appropriate music for their study and finally we all together create our own animations (P7).*
	Enriching the teaching-learning environment	1	*In order to increase the readiness of my students on the topic to be dealt with, I can make an animation and use it at the beginning or in order to reinforce my students learning, I can use it at the end of a theme (P14).*
Using Slowmation in Various Discipline	Science teaching	2	*For my students, I can use this method during the listening and viewing phase in Turkish lessons. I can use it not only in Turkish lessons but also in science while I will be teaching abstract concepts or scientific rules or theories, laws and in social studies lessons, as well (P8).*

	Life studies	2	*We used it (slowmation) for listening skills in Turkish lessons. But I think that we can use it very effectively in science and life studies lessons as slowmation is effective while showing our students the changes in a process (P14).*
	Social studies	2	*When we become teachers, we can use slowmation in most of the courses like social studies. It will be good for my students (P13).*
	Value education	2	*As I answered in the previous question, we can especially use it (slowmation) to teach abstract concepts, especially the issues of morality and virtue can be taught effectively with the animations my students and I will make together (P7).*
Philosophy of Education	Constructivism	1	*Slowmation is effective in teaching process and especially it can serve the principles of constructivism, which is our educational philosophy (P12).*
Economy	Time/Space/Cost	1	*I think that one of the most important contributions of slowmation will be to help us to save time and space. Namely, I can have my students watch animations and help them to visualize the events in the animations and doing this will not cost me much (P5).*

Depending on the pre-service teachers' answers to the question of how they can make use of slowmation in their future career and in their classrooms, it was found out that except only one participant, all the other participants wanted to use slowmation method in their classes in the future. They believe that slowmation by either teachers or students will create a better classroom setting in which students will be able to make their animations and will develop their writing skills, drawing, listening and speaking skills. Besides, 13 of the participants think that during slowmation process, their students will use their creativity while writing their story and arranging the scenes, look for information from various sources and evaluate and use that information, use technology tools and create their own media products and solve problems. Therefore, the participants believe that slowmation can contribute to 21st century skills (Partnership for 21st century learning, P21, 2015) like critical, creative and analytic thinking skills, problem solving skills, technology and information literacy skills, social skills. They believe that they can arrange group works in their classrooms and students can work cooperatively and collaboratively while they will be able to learn by experiencing and doing. Also, they are of the opinion that using new methods like slowmation in their classes will enrich the teaching-learning setting.

Apart from the findings which focus on including primary school students in the process of making their own animations, two participants pointed out that slowmation can be used effectively in science teaching, life studies and social studies as well as Turkish language teaching.

4. The findings on the opinions of pre-service teachers on slowmation experiences via distance education due to Covid-19

The opinions of the teacher candidates about their experience via distance education due to Covid-19 include "effects of Covid-19 on the mood of the students" and "effects of Covid-19 on teaching and learning" sub-themes. In the following table themes, sub-themes, codes and quotations from the interviews are given (Table 4).

The last question on the interview was on pre-service teachers' experiences via distance education due to Covid-19. The analysis of the data reveal that the participants began to answer the question by mentioning the loss of their motivation, becoming bored and worried due to the effects of Covid-19. However, despite this negative mood, most of the participants stated that they were trying to do individual studies to develop themselves by making use of the Internet, attending educational forums,

keeping in touch with their friends and teachers. They also stated that they were trying to follow online lectures or if they could not, they watched the recorded lectures offline. Besides, the participants mentioned about their preference on the delivery of instruction. While some of them preferred face-to-face education, some were of the opinion that face-to-face and distance education can be combined, which means that they would prefer blended learning.

Table 4. Themes, sub-themes, codes and quotations on the pre-service teachers' experiences via distance education due to Covid-19

4th Theme: The Pre-service Teachers' Experiences via Distance Education due to Covid-19			
Sub-theme	**Codes**	**f**	**Sample quotations**
Effects of Covid-19 on the Mood of the Pre-service Teachers	Worry	8	*As everybody, I am also very worried about what is going on all over the world and in my country. The disease has affected every part of our lives. As a student, I am worried about my education (P10).*
	Boredom	3	*I am very bored of staying at home and not being able to go out and to my university especially. I do miss my friends, my teachers, my class, everything outside (P7).*
	Loss of motivation	3	*We are worried about what happens to people all over the world because of the disease and also are worried about our own health and our families' health. On the other hand, we are struggling to continue our education and we wonder when our school will reopen. Sometimes, I feel like losing my motivation for studying and doing my assignments and tasks (P5).*
The Effects of Covid-19 on Teaching and Learning	Face-to-face education	9	*The online lessons on Zoom, your comments, our friends' sharing their comments on Whatsapp and Edmodo were all very helpful. Despite we did it on the virtual world, it was like real because we could make contact with you and my friends most of the time. But of course, I would prefer to see you in our class and have our lessons in the classroom together. Face-to-face is always the best (P1).*
	Blended learning	5	*During this Covid 19 period, I recognized that distance education can also be used in our education with face-to-face education. Even, it will be very helpful and advantageous in terms of time, money, place. We can have the theoretical parts of our lessons on distance education and in the class, we can do practices. This will save time, money and energy for us. And also, it will develop our technology skills (P9).* *We tried to follow our lessons online and offline. For some lessons I can say that distance education was good but for some I cannot say so. I think we can mix face-to-face and distance education and get a new education system (P12).*
	Individual studies	6	*We must face the reality of the disease and also we must always keep our duties as students and candidate teachers in mind. We have a lot of spare time these days, so I am trying to turn this situation into an advantage. I visit education web sides. I attend online lessons on Zoom and whenever I want, I can revisit our distance education system and watch the records of the lessons (P7).*

DISCUSSION, CONCLUSION & RECOMMENDATIONS

Covid-19 pandemic disease has suddenly changed the nature of teaching and learning processes all over the world. Taking the changing nature of teaching and learning processes into consideration, this study aimed to examine the opinions of pre-service teachers' slowmation experiences. The results of the study were gathered under four themes, the advantages of slowmation experiences, disadvantages

and difficulties of slowmation, the use of slowmation by pre-service teachers in their future career and the effects of Covid-19 and distance education on pre-service teachers' experiences.

In terms of the advantages of slowmation experience, this study shows that slowmation has an impact on skill development of the pre-service teachers. Analysis of the data highlights the fact that all the participants believed slowmation could develop learning and innovation skills, information, media and technology skills (Partnership for 21st century learning, P21, 2015) and creative writing skills. Methods, like slowmation, claymation, digital storytelling, require individuals to use multimedia tools together with other technological tools. All these methods follow some certain phases which are interconnected and interrelated to each other and at each phase animation-maker or storytellers need to put some certain skills into action. Depending on the responses of the pre-service teachers, it can be said that they focused on learning and innovation skills and information, media and technology skills. The surprising result is that life and career skills were not mentioned by any of the pre-service teachers. This result can be said to imply that the experience led the pre-service teachers to focus on ways of thinking by focusing on creativity, problem solving, critical thinking. Another implication is that the pre-service teachers' searching for information on various information resources, learning to use applications and/or software programs by which they could created media products are all factors to contribute information, media and technology skills. There are studies in the literature the results of which support the result obtained in this study. The studies show that each step performed during animation or digital story process requires and develops individuals' 21st century skills such as creativity (Atalay, 2015; Ciğerci, 2020; Yüksel, Robin & McNeil, 2011), creative thinking (Koçoğlu & Köymen, 2003), critical thinking and problem solving (Foley, 2013), technology skills (Ciğerci, 2020; Doğan, 2007; Karakoyun, 2014; Robin, 2008) and creative writing (Robin, 2006). Another result of the study in terms of the advantages of slowmation is that slowmation could enhance teaching-learning environment by creating an amusing and pleasant setting, leading to permanent learning, achieving the objectives of a lesson and creating positive effect on relationships between students and teachers. It could be said that slow motion animations could be used to increase the readiness of primary school students on the topic to be dealt with or used at the end of the theme to reinforce students learning. Likewise, Hoban, Ferry, Konza and Vialle (2007); Keast, Cooper, Berry, Loughran, and Hoban (2009) and Hoban and Nielsen (2010) think that the slowmation can be used at the end of a topic for assessment purposes and teachers can check what students have learned about the topic. They also emphasize that slowmation is an effective tool to teach abstract concepts and make learning meaningful and permanent.

In the second place, despite the advantages of slowmation, it was found out in this study that there were some disadvantages or difficulties that the pre-service teachers experienced during the process of creating animations. It can be concluded from the study that the difficulties stemmed from slowmation making process itself and lack of equipment and materials. It can be alleged that methods like animation and digital storytelling may require individuals to follow the steps carefully from wiring the story or text to sharing their products. Therefore, the pre-service teachers in this study might have found slowmation process challenging and demanding as some well-developed skills like using technology effectively are necessary. Besides, as all the participants mentioned, they did not have digital still cameras and tripods and other necessary materials like models, which are necessary during the process, so they had to use their mobile phones to produce slowmations. Though all participants had mentioned that this experience contributed to some of the 21st century skills like technology, media, creativity skills, the low quality of the slowmations produced by the pre-service teachers has a contradiction with their thoughts. The difficulties they stated and their final products imply that the pre-service teachers did not demonstrate enough performance in the 3rd, 4th and 5th steps of 5R technique in creating slowmations (Hoban & Nielsen, 2010). A similar result was also found by Atalay, Anagün and Kumtepe (2016) in their studies concluding that pre-service teachers were not good at forming models, photographing the models and creating the animation. However, it should be noted that the pre-service teachers were provided with two sessions and workshops lasting about six hours at the beginning of the semester, during which the theoretical framework of slowmation and

sample slowmation making process were presented. However, Keast, Cooper, Berry, Laura and Hoban (2009) found out in their study that "slowmation worked best when the teachers had a series of lessons in which to complete the task and when the lessons were structured in a particular way (first lesson for storyboarding, second and third for taking photos and the final lesson for presentations). On the other hand, the pre-service teachers followed the steps of slowmation process and produced their slowmations with limited equipment and materials under the condition of lockdowns due to Covid-19. Therefore, it can be said that the circumstances due to lockdowns and Covid-19 might have made it difficult for the pre-service teachers to demonstrate their skills effectively and producing high-quality slowmations.

Another result of the study obtained in the third theme of the study (see Table 3) is that the pre-service teachers seemed eager to use slowmation method in their future career. They stated that they would have their students produce slowmations or they, as future teachers, could produce their own slowmations and use them in their lessons. However, it was found out from almost all the pre-service teachers' expressions that they preferred to include their students in slowmation process instead of making their own slowmations and using them in their future career. On the other hand, the pre-service opinions that slowmation can develop primary schools students' learning and innovation skills, information, media and technology skills, social skills, language skills, psychomotor skills, grasp the attention and interest of these students, enrich teaching and learning setting and bring about collaboration and cooperation among the students are parallel with the findings of the studies by Atalay and Belet Boyacı (2019), Ciğerci and Gültekin (2017), Fleer (2013), Ochesner (2010), whose studies included children in primary or middle schools. Likewise, Hoban and Nielsen (2010) state that students learning can be enhanced through group works to create their own animations, while Hoban, Ferry, Konza and Vialle (2007) state that slowmation can provide a facilitating effect on the classroom method by ensuring that the students are intertwined with technology. Another result obtained from the findings in the third theme is that though slowmation have been included mostly in studies in science teaching (Atalay, 2015; Hoban, 2005; Hoban & Ferry, 2006; Hoban, Ferry, Konza & Vialle, 2007; Hoban, Macdonald & Ferry, 2009; Hoban and Nielsen, 2010; Pak, 2020; Uzun, 2015; Uzuner, 2018), it can be used in other courses or disciplines like language teaching course as in this study, life studies, social studies, value education and other ones and further researches can be made on the use and effects of slowmation in other courses. Besides this result, depending on the statement by one pre-service teacher, it can be said that slowamtion process may serve well the philosophy of constructivism. Likewise, Hoban, Nielsen and Carceller (2010) in their studies on student-generated animations used the term "constructionism", which is based on an integration of constructivist views of learning and social views of learning and stated that designing and making animations require students to make research, design and construct a model which is a representation of their knowledge.

One of the most remarkable results of the study is that Covid-19 pandemic disease has affected the mood or psychology of the pre-service teachers leading them to be worried and loss their motivation and get bored due to lockdowns, which can be said to be indispensable effects of Covid-19 together with many other negative impacts. According to studies on the effect of Covid-19 (Cao, Fang, Hou, Han, Xu, Dong and Zheng, 2020; Liu, Liu, Zhong, 2020; Pragholapati, 2020), the mental health of students is affected in a negative way in case of a public health emergency and quarantine life is accompanied by psychological consequences as well as social and economic ones. The increase in anxiety, depression, worry, fear, tension is among the most common results of Covid-19 and these conditions may lead to acute stress disorder, post-traumatic stress disorder, depression and even suicide. Despite all these undesired effects of Covid-19, it is found out in the study that the pre-service in this study have met distance education for the first time in their life as they stated and that some of the participants mentioned about blended learning. They did not use the term "blended" learning as most probably they did not know the term (see the sample quotation of P12 in Table 4) and instead defined it as "the combination of face to face and distance education". Though there were some pre-service teachers who favored blended learning, most of them believed that face-to-face education was better. Depending on statements of the pre-service teachers preferring blended learning could be said

to have been influenced by the certain factors affecting blended learning satisfaction as listed by various researchers. For instance, Bolliger (2004) point out three *factors instructor, technology* and *interaction*, while Naaj, Nachouki and Ankit (2012) define six factors: instructor, technology, interaction, instruction, class management and learning management system. Since the decision on the closure of schools by Ministry of National Education and Higher Education Council in Turkey was taken, the students have been going on their education via distance education and thus, they have been experiencing those factors listed above as they have been following their lesson either online or offline, making contact with the instructors through Zoom, Edmodo, WhatsApp, e-mails and/or learning management system of the university. Finally, one of the satisfying results of the study is that during the lockdowns, the pre-service teachers have made individual studies to develop themselves by making use of the Internet, attending educational forums, keeping in touch with their friends and teachers. These studies can be said that the pre-service teachers have been trying to take the responsibility of their own learning and to become autonomous learners.

Considering the above discussion points and the importance of slowmations in teaching and learning setting, some suggestions for future can be put forward. This study was limited to 15 pre-service teachers in primary education department. Future studies can be made with more pre-service teachers in primary education department as well as other departments. This study had to be conducted via distance education due to Covid-19. Further studies on slowmation with quantitative or mixed methods can be conducted with pre-service teachers via face-to-face education and the studies can also include in-service teachers. The slowmations prepared by pre-service and in-service teachers can be applied in classroom environments in schools and the eff+ects of slowmations in various courses like social studies, life studies, Turkish language teaching can be analyzed. Apart from the slowmation to be prepared by pre-service and in-service teachers, students at primary, secondary, high and university students can be given workshops on slowmation can be arranged and studies can be conducted with primary school students.

REFERENCES

Atalay, N. (2015). *Slowmation application to student's learning and innovation skills improvement in science course*. Unpublished doctoral dissertation, Anadolu University, Institution of Education Sciences, Eskisehir, Turkey.

Atalay, N., Anagün, Ş. S., & Genç Kumtepe, E. (2016). Evaluation of technology integration in science teaching with 21st century skills: A slowmation application. *Bartın University Journal of Faculty of Education 5*(2), 405-424. Doi: 10.14686/buefad.v5i2.5000183607

Atalay, N., & Belet Boyacı, D. (2019). Slowmation application in development of learning and innovation skills of students in science course. *International Electronic Journal of Elementary Education, 11*(5), 507-518.

Bang, E., & Luft, J. (2013). Secondary science teachers' use of technology in the classroom during their first 5 years. *Journal of Digital Learning in Teacher Education, 29*, 118-126.

Bolliger, D. U. (2004). Key factors for determining student satisfaction in online courses. *International Journal on E-learning, 3*(1), 61–67.

Cao W, Fang Z, Hou G, Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Research, 287(2020)* 112934. doi:10.1016/j.psychres.2020.112934

Chan, M. S., & Black, J. B. (2005). When can animation improve learning? Some implications for human computer interaction and learning. Paper presented at the Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications. (pp. 2581-2588), Norfolk, VA

Chien, Y. T., Chang, C. Y., Yeh, T. K., & Chang, K. E. (2012). Engaging pre-service science teachers to act as active designers of technology integration: A MAGDAIRE framework. *Teaching & Teacher Education, 28*, 578-588.

Ciğerci, F. M., & Gultekin, M. (2017). Use of digital stories to develop listening comprehension skills. *Issues in Educational Research, 27*(2), 252-268.

Ciğerci, F. M. (2020). Primary school teacher candidates and 21st century skills. *International Journal of Progressive Education, 16*(2), 157-174.

Connaway, L. S., & Radford, M. L. (2017). *Research methods in library and information science*. Santa Barbara, CA: Libraries Unlimited.

Dawson, V. (2008). Use of information and communication technology by early career science teachers in Western Australia. *International Journal of Science Education, 30*(2), 203-219.

DiCicco-Bloom, B., & Crabtree, B. F. (2006). The qualitative research interviews. *Medical Education, 40*, 314-321.

Dogan, B. (2007). *Implementation of digital storytelling in the classroom by teachers trained in a digital storytelling workshop*. Unpublished doctoral thesis, University of Houston.

Fleer, M. (2013). Affective imagination in science education: Determining the emotional nature of scientific and technological learning of young children. *Research Science Education, 43*(5), 2085-2106.

Foley, L. M. (2013). Digital storytelling in primary-grade classrooms. Unpublished doctoral thesis, Arizona State University.

Gao, J. P., Wong, A. F., Choy, D., & Wu, J. (2011). Beginning teachers' understanding performances of technology integration. *Asia Pacific Journal of Education, 31*, 211–223.

Göktas, Y., Yıldırım, S., & Yıldırım, Z. (2009). Main barriers and possible enablers of ICTs integration into pre-service teacher education programs. *Educational Technology & Society, 12*, 193–204

Han, I., & Shin, W. S. (2011). A multimedia case-based environment: Teaching technology integration to pre-service teachers. *Educational Technology International, 12*(1), 1–20.

Han, I., Shin, W.S. & Ko, Y. (2017) The effect of student teaching experience and teacher beliefs on pre-service teachers' self-efficacy and intention to use technology in teaching, *Teachers and Teaching, 23(*7), 829-842, DOI:10.1080/13540602.2017.1322057.

Hoban, G. (2005). From claymation to slowmation: A teaching procedure to develop students' science understandings. *Teaching Science: Australian Science Teachers Journal, 51*(2), 26-30.

Hoban, G. & Ferry, B. (2006). *Teaching science concepts in higher education classes with slow motion animation*. Association for the Advancement of Computing in Education. VA, USA.

Hoban, G. (2007). Using slowmation to engage preservice elementary teachers in understanding science content knowledge. *Contemporary Issues in Technology and Teacher Education, 7*(2), *1-9.*

Hoban, G. F., Ferry, B., Konza, D. M., & Vialle, W. J. (2007). Slowmation: exploring a new teaching approach in primary school classrooms. In J. Kiggins, L. K. Kervin & J. Mantei (Eds.), *Quality in Teacher Education: Considering different perspectives and agendas*. Proceedings of the 2007 Australian Teacher Education Association National Conference Wollongong: Australian Teacher Education Association.

Hoban, G. F., Macdonald, D. C., & Ferry, B. (2009). Improving preservice teachers' science knowledge by creating, reviewing and publishing slowmations to TeacherTube. SITE 2009 - Society for Information Technology & Teacher Education International Conference (pp. 3133-3140). Chesapeake, USA: Association for the Advancement of Computing in Education.

Hoban, G., & Nielsen, W. (2010). The 5 Rs: A new teaching approach to encourage slowmations (student-generated animations) of science concepts. *Teaching Science, 56*(3), 33-38.

Hoban, G., Nielsen, W., & Carceller, C. (2010). Articulating constructionism: Learning through designing and making "slowmations" (student-generated animations. In C. Steel, M. Keppell, P. Gerbic & S. Housego (Eds.), Conference of the Australasian Society for Computers in Learning in Tertiary Education (pp. 433-443). Queensland: University of Queenland.

International Society for Technology in Education-ISTE (2017). *ISTE standards for educators.* https://www.iste.org/standards/for-educators

Karakoyun, F. (2014). *Examining the views of elementary school students and pre-service teachers about digital storytelling activities in online environment*. Unpublished doctoral dissertation, Anadolu University Institution of Education Sciences, Eskisehir, Turkey.

Karatas, I. (2014). Changing pre-service mathematics teachers' beliefs about using computers for teaching and learning mathematics: The effect of three different models. *European Journal of Teacher Education, 37*, 390–405.

Keast, S., Cooper, R., Berry, A., Loughran, J., & Hoban, G. (2009). Using slowmation to stimulate thinking about "pedagogical intent" in science teaching and learning. Paper presented at the Annual Meeting of the American Educational Research Association.

Kervin, K. (2007). Exploring the use of slow-motion animation (slowmation) as a teaching strategy to develop year 4 students' understandings of equivalent fractions. *Contemporary Issues in Technology and Teacher Education, 7*(2),

100-106.

Kidman, G. (2015). Facilitating meta-learning in pre-service teachers: Using integration and slowmation animation. *Procedia - Social and Behavioral Sciences 167*, 117-123.

Kirschner, P. & Selinger, M. (2003). The state of affairs of teacher education with respect to information and communications technology. *Technology, Pedagogy and Education, 12*(1), 5-18.

Koçoğlu, Ç., & Köymen, Ü. (2003). Öğrencilerin hiperortam tasarımcısı olarak katıldığı öğrenme çevresinin yaratıcı düşünmeye etkisi. *The Turkish Online Journal of Educational Technology, 2*(3), 127-136.

Kurt, G. (2012). *Developing technological pedagogical content knowledge of Turkish preservice teachers of English through a design study*. Unpublished doctoral dissertation, Yeditepe University, Turkey.

Liu, X., Liu, J., & Zhong, X. (2020). Psychological state of college students during Covid-19 epidemic. Available at https://ssrn.com/abstract=3552814 or http://dx.doi.org/10.2139/ssrn.3552814

Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. San Francisco, CA: Jossey-Bass.

Miles, M.B. & Huberman, M.A. (1994). *Qualitative data analysis*. London: Sage Publication.

Ministry of National Education (2019). *Türkçe dersi öğretim programı (İlkokul ve ortaokul 1, 2, 3, 4, 5, 6, 7 ve 8. sınıflar)*. Ankara: MEB

Murtagh, Y. (2004). Clay animation in the primary classroom. Retrieved May 10th, 2020 from http://www/tsof.edu.au/Projects/PLICT/Grant/Reports03/bassham.as

Naaj, M. A., Nachouki, M., & Ankit, A. (2012). Evaluating student satisfaction with blended learning in a gender-segregated environment. *Journal of Information Technology Education: Research, 11*(1), 185–200. https://doi.org/10.28945/1692

Ochsner, K. (2010). *Lights, camera, action research: The effects of didactic digital movie making on students' twenty-first century learning skills and science content in the middle school classroom*. Unpublished doctoral dissertation, University of Arizona State, Arizona.

Orhan, D., Kurt, A. A., Ozan, Ş., Som Vural, S., & Türkan, F. (2015). A holistic view to national educational technology standards. *Karaelmas Journal of Educational Sciences, 2*, 65-79.

Pak, H. (2020). *Effect of slowmation application on students' interest and motivation in science education.* Unpublished master's thesis. Pamukkale University Institution of Education Sciences, Denizli, Turkey.

Partnership for 21st century learning, P21 Framework Definitions (2015), http://www.p21.org/storage/documents/docs/P21_Framework_Definitions_New_Logo_2015.pf.

Pragholapati, A. (2020). Covid-19 impact on students. https://doi.org/10.17605/OSF.IO/NUYJ9. Retrieved from https://edarxiv.org/895ed/ on June, 2nd, 2020.

Robin, B. (2006). The Educational uses of digital storytelling. C. Crawford et all. (Ed.), Proceedings of Society for Information Technology & Teacher Education International Conference, 709716. Chesapeake, VA: AACE.

Robin, B. R. (2008). Digital storytelling: A powerful technology tool for the 21st century classroom. *Theory into Practice, 47*, 220-228.

Russell, M., Bebell, D., O'Dwyer, L., & O'Connor, K. (2003). Examining teacher technology use: Implications for preservice and inservice teacher preparation. *Journal of Teacher Education, 54*, 297–310.

Tearle, P., & Golder, G. (2008). The use of ICT in the teaching and learning of physical education in compulsory education: How do we prepare the workforce for the future. *European Journal of Teacher Education, 31*, 55-72.

UNESCO (2020). *COVID-19 Education response education sector issue notes*. Isuue Note No.2.2. https://en.unesco.org/covid19/educationresponse/issuenotes

Uzun, E. (2015). *A research for prospective science teachers' learning with photoelectric modeling and slow-motion animation.* Unpublished doctoral dissertation, Atatürk University, Institution of Education Sciences, Erzurum, Turkey

Uzuner, Ö. N. (2018). *The effect of slowmation technique in science education on the secondary school students' achievement towards science lesson, scientific thinking skills and achievement goals*. Unpublished Master Thesis. Amasya University, Institute of Science, Amasya, Turkey.

Vratulis, V., Clarke, T., Hoban, G. & Erickson, G. (2011). Additive and disruptive pedagogies: The use of slowmation as an example of digital technology implementation. *Teaching and Teacher Education, 27*,1179-1188.

World Education Blog (2020). Covid-19: Where's the discussion on distance learning training for teachers? *Retrieved from https://gemreportunesco.wordpress.com on May 1st, 2020.*

Yıldırım, A., & Şimsek, H. (2008). *Qualitative research methods in social sciences* [Sosyal bilimlerde nitel araştırma modelleri]. Ankara: Seçkin Publishing.

Yuksel, P., Robin, B., & McNeil, S. (2011). Educational uses of digital storytelling all around the world. M. Koehler and P. Mishra (Ed.), Proceedings of Society for Information Technology & Teacher Education International Conference (1264-1271). Chesapeake, VA: AACE.

APPENDIX

In this part, there are images of the pre-service teachers' experiences and scenes from their slow motion animations on WhatsApp and Edmodo.