HOMEWORK PROBLEMS: ARE THERE ANY DIFFERENCES BETWEEN STUDENTS WITH A PREFERRED LEARNING STYLE?

by

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THESIS APPROVAL

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Homework is an important part of a student's school life, and it has been correlated with academic achievement. It formulates a connection between home and school and impacts students, their caregivers, and their teachers. Teachers design and assign homework for instructional and non-instructional purposes. Parents are encouraged to support homework assignments and assist their children with homework completion and students choose whether to complete their homework or not. Children with higher academic performance view parental involvement with their homework positively; however, children with lower academic performance perceive this behavior as controlling. In addition, when students struggle with

homework, parents tend to get more involved with their children's homework which leads to children's lower performance at school and more controlling parental involvement in homework. The visual, auditory, and kinesthetic (VAK) model when applied in classrooms has been found to increase the students' overall academic achievement and make learning fun. This study attempted to investigate if there were any differences in homework challenges between students with a preferred learning style (visual, auditory, and kinesthetic). A total of 43 parents with their children answered an on-line survey distributed via e-mail and social platforms. The survey consisted of two sections. Parents answered the first section, and their fourth and fifth grade children answered the second section. Results found no statistically significant differences in homework challenges between students with a preferred learning style. However, significant differences were found when comparing homework problems in fourth and fifth grade students, on parental educational level and in married and single parent households. Parental involvement was also discussed in the findings.

Keywords: elementary school students, homework completion, learning styles, visual, auditory, kinesthetic, VAK model

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I. INTRODUCTION

Homework Problems: Are there any Differences Between Students with a Preferred Learning Style?

Homework refers to the tasks, schoolteachers assign to their students and expect that it will be completed during non-school hours (Cooper, 2015). This definition includes all the tasks assigned to students in grades kindergarten through 12 (Cooper & Valentine, 2001). However, Cooper (2015) excludes from this definition tutoring, e-learning and extracurricular activities and the tasks assigned to students in preschool and college (Cooper & Valentine, 2001). Homework is a large part of a student's experience; it is an activity that connects school and home and affects all the involved parties (Epstein & van Voorhis, 2012). At school, teachers design, assign, and grade homework; whereas at home, students complete, or they do not complete their homework and parents try to understand the curriculum and interact with their children to complete their homework (Epstein & van Voorhis, 2012).

The History of Homework Debate

Homework has been a debatable topic ever since its origin; even the inventor's name and the date of its invention are disputable. Some consider Roberto Nevilis as the inventor of homework as we know it (Nobel, 2022), while others believe that Roberto Nevillis never existed (Summers, 2019). According to Summers (2019), Nevillis was reportedly a teacher in Venice, Italy, and he devised homework to punish the students who did not perform well at class. Summers (2019) considers this story an internet myth. In addition, Summers's (2019) review of several internet

sources resulted in two different dates: some state that Nevillis invented homework in 1095 while others in 1905. However, according to Summers (2019) neither of these dates can be supported. In 1095, there was no organized educational system in Europe, so it could not be possible for Nevillis to hold a class, assign homework to his students, and make homework known to the rest of the world (Summers, 2019). Furthermore, 1905 could not be the correct date that homework was invented because by then students were already assigned homework in the United States (Summers, 2019).

Historical review revealed that Sumerians were responsible for the formation of the first schools (Mark, 2019). Attendance was restricted only to boys from wealthy families. There was no evidence of a girl being educated from that era, whereas the poor could not afford the cost and the time to be educated (Kramer, 1981). The first recorded evidence of schoolwork comes from the first half of the second millennium B.C. from excavated clay tablets where the students did their exercises, most probably on school premises (Kramer, 1981). Students were not assigned any work to do at home; however, there is evidence of parental involvement. Upon the student's return to the house, the father would wait to be informed about the student's written work at school and the student would recite the contents of his clay tablet to his father (Kramer, 1981). In addition, when the student did not perform well at school, the father would invite the teacher to their house for dinner. The student would serve the teacher and he would present to both the teacher and the father what he has learned at school and the teacher would give feedback (Kramer, 1981).

The first mention of assigned homework is dated to the 1st century AD (Summers, 2020). Pliny the Younger was an oratory teacher, who asked his students to practice public speaking at home to enhance their fluency and confidence in their speeches (Summers, 2020). This form of assignment though was not the same with the type of work students do as a homework today. Nonetheless, throughout history, there are instances where pupils memorized text and learned to read and write before homework was given its proper definition (Summers, 2020).

In 1837, Horace Mann (1796-1859) became the first secretary of the state Board of Education (Benesh, 2012). His work involved the reformation of the public school system in the United States of America. When he visited Prussia, he became familiar with their educational system and upon his return to the United States adapted it to the American educational system (Summers, 2019). The Prussian educational system had a nine-year mandatory education, the Volkschule which was provided by the state. Furthermore, Volkschule students were assigned tasks that they had to complete at home, at their own time, a practice that Horace Mann found interesting and introduced it to the United States, a practice currently known as homework (Summers, 2019). For his contribution to the educational system, Horace Mann was called after his death, the Father of American Education (Benesh, 2012).

Gill and Schlossman (2004) provided an overview regarding the history of homework in grades k-12 over the last century in the United States of America. Specifically, during the 19th century, homework assignments were not a common occurrence for all students. The tasks assigned would differ according to the school age level. Elementary school students were not assigned any homework, whereas middle school students had to memorize and recite the next day's lesson. High

school students were the only ones who had homework every day; usually 2-3 hours every night including weekends (Gill & Schlossman, 2004).

The beginning of the 20th century was a time where parent – teacher associations urged school boards to regulate homework assignments and the beginning of the homework debate (Gill & Schlossman, 2004). Some school districts wanted to restrict homework, while others wanted to abolish it all together. Some of the major criticisms at that time were that homework did not facilitate learning and it caused children health problems. They argued that homework was hazardous for children's health because children did not have time for outdoor play (Gill & Schlossman, 2004). Specifically, it was Edward Bok in 1900 that published the article "A National Crime at the Feet of Parents" accusing homework of being a threat for the physical and mental health of students and of taking over the right of the parents to choose appropriate home activities (Loveless, 2014). However, contrary to these criticisms, parents liked their children having homework. They believed that it improved their children's learning and that it promoted good character traits (Gill & Schlossman, 2004). Nevertheless, in 1901, the state of California banned homework for students younger than 15 years old and this ban stayed in effect until 1917 (Summers, 2019).

Gill and Schlossman (2004) concluded their historical overview in the years during the second half of the 20th century. After the launch of the Soviet satellite, homework in the United States became synonym for student achievement and academic scholarship. Parents were encouraged to support homework assignments and have an active communication with the school. At the beginning of the 1980s,

elementary school students would also have homework assignments (Gill & Schlossman, 2004).

Scott and Glaze (2017) examined the policies of a Montessori elementary school that changed its homework practices in 2016. The school decided to change from traditional homework practices to having the students decide what they wanted to do for homework. Students were encouraged to choose a homework activity for each evening and were instructed to select activities that enabled them to experiment with new things, help their families, or contribute to the community. Scott and Glaze (2017) surveyed the teachers and the parents and interviewed the students and collected samples of their work. Results revealed that the teachers in the upper elementary classes (grades four through six) reverted almost immediately to traditional homework practices because these teachers believed that there was a decline in the students' work. Some teachers in the lower elementary classes (grades one through three) also reverted to the traditional homework practices while others opted to a mixed design. The mixed design teachers would participate in homework choices, but they would send structured homework to parents who would want more support to help their children (Scott & Glaze, 2017).

In Scott and Glaze's (2017) study, 48% of the parents reported that they liked the new homework policy and 30% did not express any preference. However, there were parents who were concerned that the new policy would not help their child to succeed and requested the old homework policy to be implemented again (Scott & Glaze, 2017). In addition, Scott and Glaze (2017) found that there were parents who were undermining the student's choice in the activities by telling them what to do. Other children would repeat the activities, or they would increase their

responsibilities at a preexisting chore. Nevertheless, there were a few students who tried new activities that would interest them and their families, and these students exhibited an increased interest in learning. It is worth mentioning though that the teachers reported that there was no positive or negative academic performance on the students' standardized measures of assessment (Scott & Glaze, 2017).

Whether homework is beneficial for the student or not is an ongoing debate (Kidwell, 2004). Currently, the debate continuous with teachers assigning homework to improve students' achievement scores, articles declaring that homework is stressful to students, and parents trying to efficiently manage time between their work loads and finding ways to help their children with their homework (Cooper 2015). In a survey in 2007 in the United States, it was found that 95% of elementary school children from kindergarten through grade eight were assigned homework and these students would spend 4.7 hours on average per week to do their homework (National Center for Education Statistics, 2008). The same survey revealed that 95% percent of the parents check that homework is done and 82.5% of the parents help their children with their homework at least once a week (National Center for Education Statistics, 2008). Furthermore, a global survey was conducted between the 8th of December 2017 to the 15th of January 2018 with the participation of 29 countries. It was found that parents spent on average 7 hours per week helping their children with their homework between the ages of 4 to 11 years old (The Varkey Foundation, 2018).

The Purpose of Homework

Teachers assign homework for instructional purposes, i.e., to enhance academic skills (Holland et al., 2021), learning outcomes (Ramdass & Zimmerman,

2011) and improve the academic achievement of the students (Falch & Rønning, 2012). Additionally, elementary school teachers report assigning homework for non-instructional purposes as well. They assign homework for skill practice, to develop work ethic, and to teach the students to be responsible and independent (Holland et al., 2021). They report assigning homework for self-regulation purposes as well; self-regulation defined as time management, self-efficacy, self-reflection, delaying gratification and inhibiting distractions (Cooper et al., 2006; Ramdass & Zimmerman, 2011).

Most parents believe that homework helps children's learning, and they are not opposed to homework assignments (Holland et al., 2021). They believe that homework enhances students' academic achievement by promoting certain characteristics like responsibility and discipline that will lead to future successful learning (Coutts, 2004). However, they do believe that interferes with family time, causes stress and anxiety, and creates a power struggle (Donaldson-Pressman et al., 2014; Holland et al., 2021; Pressman et al., 2015). Also, parents report that when they interfere with their children's homework at instructional level, they feel frustrated and stressed (Holland et al., 2021; Pressman, et al., 2015).

Elementary school children believe that they are assigned homework to revise and learn the class material and they complete it because they feel pressured to do so, or because they want to please their parents and teachers (Coutts, 2004; Froiland, 2013). In high school, students believe that they are assigned homework because there is not enough time in class to revise the material that the teacher introduced that day (Coutts, 2004). Consequently, there are students who believe that homework will benefit their learning and complete their assignments and others

that they do not do their homework (Coutts, 2004). Children are more likely to effectively complete their homework when they believe it is useful, interesting, and engaging (Coutts, 2004). Therefore, when teachers assign homework, they should explain the purpose of the assignment and its application in real life and not just state the due date and the implications for not turning it in (Froiland, 2013).

Parental Involvement in Homework

Parental involvement was defined as parental participation in their children's learning processes and experiences (Jeynes, 2007). In addition, Patall et al. (2008) defined parental involvement as parents helping their children with homework. Research has shown that children who are good students tend to talk more about school and homework with their parents and view parental involvement positively (Epstein, 1983; Hoover-Dempsey et al., 2001). Whereas, when children struggle with school, parents feel pressured to be involved in their children's homework (Hoover-Dempsey et al., 2001). The worse a student performs at school, the more the parents try to help with their children's homework (Silinskas et al., 2012). According to Silinskas et al. (2012), compared to fathers, mothers react immediately to their children's struggles and tend to provide more help with homework than necessary. Moreover, research has shown that when mothers help their children with homework in the second and third elementary grades, the students' persistence to task diminishes, whereas when mothers grant autonomy, the students' persistence to task increases (Viljaranta et al., 2018). In addition, according to previous research, students who receive consistent parental assistance have lower academic performance than those who complete their homework on their own (Fernández-Alonso, et al., 2022; Viljaranta et al., 2018).

Finally, parental involvement has been positively correlated with poor school performance (Fernández-Alonso, et al., 2022; Núñez et al., 2015; Wu et al., 2022) and has not been associated with better performance at school (Silinskas et al., 2012). Furthermore, students whose teachers believe that they should do their homework without parental involvement showed increased effort and positive emotions towards homework (Trautwein et al., 2009). In contrast, students whose teachers supported parental involvement in homework showed decreased effort and negative emotions towards homework (Trautwein et al., 2009). In addition, when parents interfere with homework and correct it, children lose their motivation to learn and teachers cannot detect gaps in knowledge to assist children in their learning (Donaldson-Pressman et al., 2014; Hill & Tyson, 2009). On the other hand, academic achievement has been found to be positively correlated when homework is assigned regularly (Falch & Rønning, 2012) and with the amount of homework completed (Fan et al., 2017; Núñez et al., 2015; Núñez et al., 2017). Núñez et al. (2015) suggested that if students could improve their skills of time management in homework completion and parents were involved with schoolwork productively, then more students would increase their homework completion and improve their academic achievement.

Quality of Parental Involvement and Self-Determination Theory

Parental involvement in homework has been found to be correlated with academic achievement and children's motivation to learn. Whether the correlation would be positive or negative depends on how the children perceive the involvement (Dumont et al, 2012; Pomerantz et al., 2007). Parents can be perceived as supportive and encouraging when they discuss with their children about school

and homework (Grolnick & Pomerantz, 2022; Wilder, 2014). In contrast, children may perceive their parents as controlling when the parents constantly offer their assistance and check their children's homework regularly (Grolnick & Pomerantz, 2022; Wilder, 2014).

The importance of the quality of parental involvement is discussed in relation to the Self-Determination Theory (SDT; Ryan & Deci, 2017) and its focus on how cultural, social, or biological factors may enhance or thwart human development. The theory examines the factors that facilitate or undermine motivation, social assimilation, and psychological welfare, with a special focus on intrinsic motivation (Ryan & Deci, 2017). Ryan and Deci (2000) define intrinsic motivation as "the inherent tendency to seek out novelty and challenges, to extend and exercise one's capacities, to explore, and to learn" (p.70). In addition, intrinsic motivation in students is enhanced when students believe that they can do the work and make a connection to that work (Donaldson-Pressman et al., 2014).

According to the SDT, the quality of parental involvement can be autonomy support or controlling (Ryan & Deci, 2017). An autonomy support parental involvement is critical for the children's self-development. These parents acknowledge their children's choices, allow self-expression, and value their initiatives. In contrast, a controlling parental involvement hinders self-development. Controlling parents have the tendency to pressure their child to behave or think in certain ways (Ryan & Deci, 2017).

An autonomy-supportive parent promotes children's motivation for positive engagement in school related activities (i.e., provide the choice of when to do the homework) (Pomerantz et al., 2007). When the child has trouble in completing their

assignments, the parent encourages the child to have a second look instead of giving the answer (Gonida & Cortina, 2014). Finally, an autonomy-supportive parent allows the children's input in homework decisions (Grolnick & Pomerantz, 2022). Therefore, when children perceive their parents as supportive, then parental involvement can enhance students' achievement (Silinskas & Kikas, 2019) and their academic performance (Gonida & Cortina, 2014; Naite, 2021).

On the other hand, a controlling parent pressures their children with demands and takes over at the first sign of difficulty the child has in completing their homework (Grolnick & Pomerantz, 2022). This parent makes the choice without taking into consideration the child's input (Pomerantz et al., 2007). The controlling parent regularly checks if the homework has any mistakes and if it was completed effectively (Gonida & Cortina, 2014). Furthermore, the parents' controlling and intrusive behavior may unintentionally display messages of incompetence to their children (Orkin et al., 2017). In addition, there seems to be a reciprocal relationship, where low performing students tend to report more parental control which leads to lower functioning on the students' part (Benckwitz et al., 2023; Dumont et al., 2014; Gonida & Cortina, 2014; Núñez et al., 2015; Núñez et al., 2017).

To summarize, teachers assign homework to students for both instructional and non-instructional purposes (Falch & Rønning, 2012; Holland et al., 2021; Ramdass & Zimmerman, 2011). Although parents like their children to have homework assignments, they also believe that it is a source of stress and creates friction in the family dynamics (Donaldson-Pressman et al., 2014; Holland et al., 2021; Pressman et al., 2015). Furthermore, students perceive their parental involvement positively or negatively depending on a) the students' academic

performance (Epstein, 1983; Hoover-Dempsey et al., 2001), and b) the quality of parental involvement (Ryan & Deci, 2017). Drawing from the SDT (Ryan & Deci, 2017), students with autonomy-supportive parents perceive parental involvement as positive, which leads to an increase in academic performance and achievement (Gonida & Cortina, 2014; Naite, 2021; Silinskas & Kikas, 2019). Whereas a struggling student views parental involvement as controlling which leads to the student's lower performance and to a more controlling parental involvement (Benckwitz et al., 2023; Dumont et al., 2014; Gonida & Cortina, 2014; Núñez et al., 2015; Núñez et al., 2017).

Learning Styles

Learning style theory states that every student has a preferred way to learn (Fallace, 2023). Learning style refers to the way a student absorbs, retains, and recalls new information (Felder & Henriques, 1995). It is important for students to find their own learning style because it is a step towards self-sufficiency in learning (Reid, 2014). Furthermore, recognizing one's own learning style is beneficial in developing strategies for learning (Rolfe & Cheek, 2012) and attaining a better learning outcome (Vizeshfar & Torabizadeh, 2018).

A successful learner does not have one specific learning style, they have however a preferred one (Saleem et al., 2021). In addition, it should be noted that the preference in a specific learning style is influenced by the student's age, educational level, and motivation, thus it is expected to change (Brown, 2003; Koohestani & Baghcheghi, 2020). However, when the students' preferred learning style is applied, it assists students to learn effectively (Saleem et al., 2021). Accordingly, the student should be viewed as having a strength in this specific style, rather than putting a label on the child (Department for Education and Skills, 2002).

For example, the student should be perceived as having a strength in visual learning rather than being a visual learner (Department for Education and Skills, 2002).

In the literature there are numerous theories and models concerning learning styles. Coffield et al. (2004) detected at least 71 different models of learning styles based on different theories. Each of these models has its own respective instruments and according to Coffield et al. (2004), the list is not exhaustive. Coffield et al. (2004), grouped these models into five major categories set on a continuum depending on how rigid or flexible their theories are. For example, at one end, the learning styles are based on fixed personality traits. These theories suggest that there is a strong influence of genetics and that the learning styles cannot be changed. At the other end, the learning styles are based on the way students choose to approach learning and the strategies they use. These theories focus on personal and environmental factors and the choices the students make when selecting learning strategies (Coffield et al., 2004).

Reid (1995, as cited in Litta et al., 2015) on the other hand, grouped the learning styles into three categories: the sensory, cognitive and personality learning styles. The sensory learning style indicates that students prefer to learn through physical and perceptual channels. The cognitive learning style refers to the way students prefer to analyze data and process information. Finally, the personality learning style suggests that students prefer to learn by interacting with other people.

Another categorization was made by Willingham et al. (2015) who divided the learning styles into two major categories depending on the students' preference for processing information. The first category was based on what type of information is processed. For example, if the information is visual, auditory, or kinesthetic. The

second category refers to the ways the information is processed. For instance, if the information is processed through the student's intuition or analysis procedures. Since the 1980s, the most popular learning style has been the visual, auditory, and kinesthetic (VAK) model (Fallace, 2023) and this current research is focused on this model.

Learning Type Characteristics

Visual Learning Type

The prevalence of this learning type is visual memory; therefore, students store new information when they see written text and depend on the visual representation of the learned material (Barbe et al., 1979, as cited in Titchiev et al., 2023; Reid, 2014; Wood, 2000). In addition, they prefer written instructions to verbal ones and they would select a book to read with illustrations and images. They would rather study alone using flash cards and diagrams and review the material by writing down notes. Students with a visual learning preference would also like watching movies, drawing, or painting (Barbe et al., 1979, as cited in Titchiev et al., 2023; Reid, 2014; Wood, 2000).

Auditory Learning Type

The prevalence of this learning type is auditory memory; hence, students associate sounds with the new information (Barbe et al., 1979, as cited in Titchiev et al., 2023; Reid, 2014; Wood, 2000). These students learn better while listening to a lecture. They would prefer to study while listening to music. Moreover, they would like group discussions and debates. Students with an auditory learning preference retain more information with verbal instructions than written ones. Additionally, they prefer to read out loud for repetition. Finally, they also like listening to the

radio, and podcasts (Barbe et al., 1979, as cited in Titchiev et al., 2023; Reid, 2014; Wood, 2000).

Kinesthetic Learning Type

The prevalence of this learning type is movement; thus, students learn better when they move around, or touch and manipulate the material being studied (Barbe et al., 1979, as cited in Titchiev et al., 2023; Reid, 2014; Wood, 2000). In addition, they would like to doodle while listening to a lecture. Students with a kinesthetic learning preference absorb new information better when they are active participants in the learning process and have the opportunity to experiment. They also like sports, dancing and playing a musical instrument (Barbe et al., 1979, as cited in Titchiev et al., 2023; Reid, 2014; Wood, 2000).

Learning Styles and Instruction

Apart from the debate whether to assign homework or not, another debate in education concerns the application of learning styles as an instructional method. The debate revolves around questions such as whether the teachers should calibrate their teaching styles to match the learning styles of their students (Wininger et al., 2019), or the fact that there are not enough studies based on appropriate research methods to prove the learning style hypothesis (Pashler et al., 2009). Nevertheless, in a review of studies in five different countries, there was a significant proportion of teachers (93% to 97%) who believed that students learn better when the information is taught in their preferred learning style (Howard-Jones, 2014). The learning styles named at these studies were visual, auditory, or kinesthetic and the participating countries were the United Kingdom, Holland, Turkey, Greece, and China (Howard-Jones, 2014). Likewise in a smaller scale survey, participants were asked if they

believed that some people learn better by seeing, others by listening and others by doing (Willingham et al., 2015). Answers were given on a 7-point Likert Scale (1 = strongly disagree to 7 = strongly agree) and the mean rate of the results was 6.35 (Willingham et al., 2015).

The use of the VAK model in class has been positively correlated with the improvement of the overall academic performance of students in the 4th grade (Rosdiana et al., 2022), and the 10th grade (Saleem et al., 2021). In the Rosdiana's et al. study (2022), 24 students attending the fourth grade were selected. Data obtained from the class teacher revealed that 14 out 24 students could not reach the minimum standard score of 70 and above. The study consisted of two cycles with four phases each (planning, implementing, observing, and reflecting). The results obtained after the completion of the first cycle revealed that there were still eight students who did not reach the minimum standard score of 70 and above. However, after completing the second cycle, results showed that only three students did not reach the minimum standard score of 70 and above (Rosdiana et al., 2022).

Saleem's et al. (2021) also found a significant positive relationship between learning styles and academic performance. Their research additionally investigated if there were any gender differences in learning styles. In their study 391 10th grade students participated (205 boys and 186 girls). The results showed that most of the female students showed a preference in visual or auditory learning style, while most of the boys' preferred learning style was kinesthetic (Saleem et al., 2021).

Moreover, the implementation of the VAK model in the teaching style has also increased the performance of students in individual courses. For example, students' learning outcomes have been improved in mathematics and problem

solving (Ikawati & Kowiyah, 2021; Khoirunnisa & Iba, 2022; Permana et al., 2020), in vocabulary (Hidayatullah et al., 2022; Suaib, 2019), in writing (Kusumawarti et al., 2020; Litta et al., 2015; Ramadian et al., 2019) and in science (Dewi et al., 2023). To illustrate, Khoirunnisa and Iba (2022) found that there is a significant positive relationship between the application of the VAK model in the teaching style and the students' achievement in mathematics for 32 third grade students. They also observed that these students became more enthusiastic and engaged in class.

In addition, Permana et al. (2020) demonstrated that the application of the VAK model also helped in e-learning. Specifically, they found that 96 seventh grade students in an e-learning class improved their ability in problem solving in mathematics. Similarly, in Ikawati and Kowiyah's (2021) study participated 61 fourth grade students attending on-line classes in mathematics. Thirty students participated in the class where the teacher had implemented the VAK model, and 31 students were taught using conventional methods. Each group had three lectures and then was given the same test in problem solving. Results showed that the average score of the students that were taught using the VAK model was 81.26, whereas the score of the students that were taught with conventional method was 69.80. On both groups a normality test was performed and the sample was found normally distributed. In addition, the results of the homogeneity testing showed that the two samples had homogeneous variances (Ikawati & Kowiyah, 2021).

A vocabulary test serving as a pretest revealed that 18 out of 25 students in the seventh grade could not pass the minimum score of 70 for the vocabulary course (Hidayatullah et al., 2022). Moreover, almost all students responded negatively on a questionnaire regarding their interest in the course, their vocabulary mastery, and

the teaching method. After the implementation of the VAK model, a posttest and a questionnaire were administered. Posttest results showed that only four out of the 25 students could not pass the minimum score, while 88% of the students responded on the questionnaire that they found the VAK model as an appropriate and joyful teaching method for improving vocabulary (Hidayatullah et al., 2022).

Suaib (2019) also tested vocabulary improvement in 40 seventh grade students. The students were divided into two groups, the experimental and the control group. Each group received a pretest and a posttest in vocabulary. At the pretest, the average score of the experimental group was 47.40 whereas the average score of the control group was 45.80. The experimental group was taught vocabulary with the application of the VAK model, while the control group was taught vocabulary using conventional methods. Posttest results revealed that the experimental group had increased the average score to 82.40, whereas the control group reached an average score of 58.80. Finally, 84% of the students reported that they found the implementation of the VAK model in teaching vocabulary very interesting (Suaib, 2019).

Kusumawarti et al. (2020) investigated the effectiveness of the VAK model in the narrative writing skills of 114 fifth grade students. The students were randomly divided into two groups: a) the experimental group consisting of 61 students, and b) the control group consisting of 53 students. Each group received the same pretest in narrative writing, and the average scores for the experimental and the control group were 66.03 and 67.19 respectively. In both groups the minimum score was 60 and the maximum score was 73. The teachers of the students in the experimental group taught the course by implementing the VAK model for the whole academic year,

whereas the teachers of the control group did not differentiate in their teaching methods. All the students were given the same posttest and results showed that the experimental group had an average score of 81.31 with a minimum score of 75 and a maximum score of 86. In contrast, the control group did not show any improvement and retained the same minimum and maximum scores they had in the beginning with an average score of 67.36 (Kusumawarti et al., 2020).

Furthermore, Litta et al. (2015) examined the improvement of the eleventh-grade students in the five elements of writing by implementing the VAK model. The five elements of writing were content, organization, language use, vocabulary, and mechanics. Two classes of 30 students each participated in the study via cluster sampling. One class (the experimental) was taught by meshing the VAK model with the teaching style whereas the other class (the control) used the conventional methods. Both classes were administered a pretest and a posttest. In the pretest, the experimental class had an average score of 44 in the five elements of writing, while the control had an average score of 38.90. After six lectures for each class, the students were given a posttest. Results showed that the experimental class improved their writing skills and had an average score of 73.20, while the control class had an average score of 58.10. In addition, 87% of the students in the experimental group responded as strongly interested in the use of the VAK model as a method to improve their writing ability (Litta et al., 2015).

In addition, in Ramadian's et al. (2019) study, 26 tenth grade students participated to improve their descriptive writing skills. The students were given a pretest to assess their skills. The average score of the class was 43.31 and only one student managed to reach the minimum mastery criteria which was set at 75 by the

researcher. After the implementation of the VAK model the class was given a posttest. The average score of the class increased to 81.49 and 19 students reached the minimum mastery criteria of 75. Although seven students did not reach the minimum mastery criteria, five of them increased their individual scores whereas the other two had similar results (Ramadian et al., 2019).

Finally, the application of the VAK model as an instructional method not only improved the students' learning in science but the students also reported to be more enthusiastic and having more fun in class (Dewi et al., 2023). Specifically, Dewi et al. (2023) randomly selected 62 fifth grade students from a population of 172 students. The experimental class had 32 students and the control class had 30 students. After six lectures where the experimental group was taught by implementing the VAK model, both groups were administered a test. Results showed that the experimental group had an average score of 78.75 while the control group had an average score of 59.21 (Dewi et al., 2023).

Opponents of meshing learning styles to the teaching styles claim that although variations of the VAK model in the classroom are very popular, there is a lack of empirical evidence to support the benefit to the students (Pashler et al., 2009; Wininger et al., 2019). More specifically, although students may voice their preference in studying using the visual or the auditory channel when these preferences are being tested under controlled conditions, the results show no difference, thus terming the learning styles as an educational myth (Riener & Willingham, 2010). In addition, the brain has interconnectivity (Howard-Jones, 2014), so some people's erroneous belief that different learning styles activate different brain regions (Nancekivell et al., 2020) cannot be supported (Howard-Jones, 2014).

Furthermore, the opponents believe that the application of the learning styles will be expensive and that it would be more beneficial to use other interventions such as smaller classes or more tutors in classrooms (Rohrer & Pashler, 2012). Finally, they argue that psychology as a science has provided experimental based studies that teachers can employ to benefit students' learning outcomes (Willingham et al., 2015).

Nevertheless, the critics do not believe that learning styles should be completely excluded from the classrooms. They claim that learning styles should not be considered as the panacea in students' learning (Willis, 2017). In addition, they admit that there are many variations of the learning styles and a number of them have not been tested yet (Pashler et al., 2009). Finally, Pashler et al. (2009) acknowledge that further research with appropriate scientific methods is needed before making any conclusions. Granting evidence-based research will provide proof that learning styles exist, lack of this evidence does not prove that learning styles do not exist (Riener & Willingham, 2010).

Although the debate is currently on-going, there are studies that indicate that incorporating different learning styles in the classroom has the potential to enhance students' learning (Rosdiana et al., 2022; Saleem et al., 2021). In addition, students have reported that the use of learning styles in class makes learning fun (Dewi et al. 2023), and interesting (Litta et al., 2015; Suaib, 2019). Moreover, students became more enthusiastic and engaged in class (Hidayatullah et al., 2022; Khoirunnisa & Iba, 2022). Finally, the application of the learning styles in class can inspire teachers to a variety of teaching methods (Kotecha, 2019).

Importance of Study

Parents believe that homework is a stressful anxiety-filled activity that affects how the family spends their time together (Donaldson-Pressman et al., 2014; Holland et al., 2021; Pressman et al., 2015). In addition, the younger the children, the less effective study habits they appear to have (Cooper & Valentine, 2001). According to Anesko et al. (1987), it is important to identify homework challenges as early as possible. Early identification of homework challenges has the potential to apply changes in study habits and prevent later study-related problems (Anesko et al., 1987). Therefore, this study tried to investigate if students with a preference for a specific learning style appeared to have more challenges with homework than students with a preference for a different learning style. If there were any differences, future research might investigate if the application of specific strategies based on the student's preferred learning style would reduce homework problems.

Research Aims

Children’s motivation to learn has been correlated with the way children perceive their parents’ involvement (Dumont et al, 2012; Pomerantz et al., 2007). An autonomy-supportive and productive parental involvement with homework will increase the students’ intrinsic motivation to learn (Ryan & Deci, 2017). Additionally, it will enhance the students’ autonomy by believing that they are able to do their own homework (Donaldson-Pressman et al., 2014). Finally, the students will engage positively in school related activities (Pomerantz et al., 2007).

In contrast, when a child struggles with their studies, parents tend to be more involved with their homework (Hoover-Dempsey et al., 2001). The child perceives this involvement as a controlling behavior which leads to more struggles and lower

academic performance (Benckwitz et al., 2023; Dumont et al., 2014; Gonida & Cortina, 2014; Núñez et al., 2015; Núñez et al., 2017). A controlling parent inhibits the child's intrinsic motivation by pressuring them to act in specific ways (Ryan & Deci, 2017). It has also been found that when parents constantly assist with their children's homework, the children perform worse at school than those who complete their homework by themselves (Fernández-Alonso, et al., 2022).

Research has indicated that when teachers apply the VAK model in the classroom, students become more engaged in class (Dewi et al., 2023; Hidayatullah et al., 2022; Khoirunnisa & Iba, 2022; Litta et al., 2015; Suaib, 2019) and increase their overall academic performance (Rosdiana et al., 2022; Saleem et al., 2021). This study tried to investigate if fourth and fifth grade students with a strength in a specific learning style (for example visual learning style) would have less or more homework challenges than students with a strength in another learning style (i.e., auditory or kinesthetic). Therefore, the hypotheses of this study were:

H_0: There are no differences in homework challenges between students in the fourth and fifth grades with a preferred learning style (visual, auditory, and kinesthetic).

H_1: There are differences in homework challenges between students in the fourth and fifth grades with a preferred learning style (visual, auditory, and kinesthetic).

II. METHOD

Participants

Participants were native Greek elementary school children in the fourth and fifth grades and the caregivers who help them with their homework. The sample included only fourth and fifth graders because the scales that were used have been found valid and reliable with students in those grades. The sampling method was a non-probability snowball convenience and voluntary response sampling. An announcement for participation and the link of the on-line study was e-mailed to elementary schools and English language learning centers in Athens (see Appendix A). The announcement was also translated in English (see Appendix B). The schools' administrations further distributed the announcement via mail or social platforms (Viber, WhatsUp) to the parents of fourth and fifth grade students. Additionally, the researcher also distributed the link to the on-line survey via e-mail and social platforms (Viber, WhatsApp) to parents who are personal or work-related acquaintances to her asking them to distribute the survey to their acquaintances. Data was collected on those who volunteered to answer.

Materials

The on-line survey was created using Qualtrics XM. The survey was written in Greek as all respondents were native Greek speakers (see Appendix C). The survey was also translated in English (see Appendix D). The survey's introductory paragraph explained the purpose of this study to the participants. It clearly stated that participation was anonymous. In addition, parents were informed that their

children's and their participation was voluntary, and they could stop answering the survey whenever they choose. Moreover, the parents gave their consent at the beginning of the questionnaire. It was a required field and if they chose to continue, they would have to select the appropriate box. The children were also informed about the purpose of this study, the content of the questions answered by their parents and that their parents have agreed to their participation. They were informed that their participation was anonymous and voluntary, and they were asked to give their own consent at the beginning of their section. It was also a required field and if the children chose to continue, they would have to select the appropriate box. If they did not wish to continue, they were given instructions to just close the browser.

The survey consisted of two sections with instructions for each one. The first section was answered by the parents who were usually assisting their children with their homework. It consisted of the demographic questionnaire and the Homework Problem Checklist (HPC; Anesko et al., 1987). The demographic questions were open and close ended questions and were constructed by the researcher. These questions were used for statistical purposes.

The HPC followed the demographic questionnaire. The HPC is a parent-answered instrument and was used to assess the students' difficulties with homework. It consists of 20 items related to homework challenges and parents reported the frequency of these behaviors on a 4-point Likert scale (0 = never, 1 = at times, 2 = often, 3 = very often). The higher the score the more problems have the students with homework. The original HPC was developed in English and the researcher translated it in Greek for the purposes of this study. The HPC has been

found valid and highly reliable for assessing homework problems of elementary students in the second to fourth grades (Anesko et al., 1987) and of students with learning difficulties in k-12 grades (Foley & Epstein, 1991). In addition, the HPC has demonstrated acceptable levels of internal consistency for assessing homework challenges of students aged 7-18 years old with behavior disorders (Foley & Epstein, 1993).

The second section was answered by the students and consisted of the Questionnaire of Students' Learning Style (QSLS; Maryani et al., 2017). The QSLS was used to find the students' preferred learning style. The authors of this scale developed the items based on current literature review on the three major types of learning styles: visual, auditory, and kinesthetic learning style. The original instrument was written in Bahasa Indonesia. In the article where this instrument was published, Maryani et al. (2017) translated it in English and for the purposes of this study the scale was translated in Greek by the researcher. The QSLS has been found valid and highly reliable for elementary students in the fourth grade (Maryani et al., 2017).

It consists of 54 items, 18 for each preferred modality where the students answer with a "Yes" or "No". There is a further distinction of 9 favorable and 9 unfavorable items in each category. For example, the item "I take notes in my notebook neatly and regularly" is considered a favorable item for children who prefer the visual learning style, hence if a student answers with a "Yes" gets 1 score point, if they answer with a "No" get 0 score points. Likewise, the item "I rarely take notes of the messages the teacher verbally tells me" is considered an unfavorable item for the visual modality preference, thus students who answer affirmatively get

0 score points, whereas students who answer negatively get 1 score point. The scores are added for each style and the higher the score in a modality that is the student's preferred learning style (Maryani et al., 2017).

Design and Procedure

The study was a cross-sectional quantitative on-line survey design. All data was collected from the participants at a particular point in time. At first, the caregivers answered the first section of the questionnaire that consisted of the demographic questions and the HPC. Then, the students answered the QSLS which consisted of the second section. The researcher sent e-mails to private and public elementary schools and English language centers in Athens requesting their assistance in distributing the survey to the parents of fourth and fifth grade students. Parents received the survey link from school administrators via e-mail or social platforms (e.g., Viber, WhatsUp). Additionally, the researcher also distributed the link to the on-line survey via e-mail and social platforms (Viber, WhatsApp) to her contacts. Parents read the introductory paragraph which explained the purpose of this study and clearly stated that participation was anonymous and voluntary. The names and communication details of the researcher and her thesis advisor were posted in case there was a requirement for additional information.

To proceed with the questionnaire, parents gave their consent by selecting the appropriate box at the beginning of the questionnaire. After this, parents answered the demographic questions and the HPC. Finally, the children also gave their consent and then proceeded to answer the final section with the QSLS questions. Each section needed 10 – 15 minutes to complete. At the end of the

survey, participants were thanked for their time and participation, and they were informed that their responses have been recorded.

III. RESULTS

Data Analysis

Data were analyzed by using SPSS (IBM® SPSS® 29.0.1). Items on the Likert scale concerning the HPC were given a score from 0 to 3 (Anesko et al., 1987). The higher the score the higher the homework problems. A total raw score of approximately 18 was recommended as a cutoff for clinical significance (Power et al., 2001), thus the scores were grouped into three categories (0-17, 18-30 and 30+). The grouping was used only for describing the students' characteristics. Further analysis of the data was conducted using the actual scores on HPC. Regarding the QSLS, items were scored with 1 point when the students answered with a "Yes" to a favorable item and when they answered with a "No" to an unfavorable item (Maryani et al., 2017). The scores were added for each style and the higher the score in a modality that was the student's preferred learning style. In cases where the student had the same score in two or more modalities (i.e., same score in visual and auditory items), the student was regarded with a mixed preferred learning style. Time spent on homework was converted to minutes spent on homework since some parents reported time as hours whereas others as minutes. In addition, wherever the reported time had an estimate (e.g. 1-2 hours), the average time was recorded (e.g. 90 minutes). Finally, the children's age was rounded up; for example, 9.5 years old was recorded as 10 years old.

Demographic Characteristics

Forty-three pairs of parents and their children responded to the on-line survey from January 16th, 2024, to February 12th, 2024. However, because one questionnaire had the same answer (Never) to all the items of the HPC and (Yes) to all the items of the QSLS it was excluded as an outlier. In addition, one respondent did not answer any demographic questions. This response was not excluded from the sample since the participants completed the HPC and the QSLS.

Therefore, the sample consisted of 42 pairs of parents and their children. The parental sample consisted of 39 mothers (95.10%) and 2 fathers (4.90%). The children's sample consisted of 19 female students (46.30%) and 22 male students (53.70%). Twenty-five (61.00%) were fourth graders and 16 (39.00%) were fifth graders. Descriptive statistics were used to summarize the parental demographic characteristics of the participants (Table 1) and their children (Table 2).

Homework Problems and Learning Styles

Results showed that among the students of fourth and fifth grade, 15 students (36.60%) showed a preference in the auditory learning style, 11 students (26.80%) in the visual learning style, 10 students (24.40%) in the kinesthetic learning style and five students (12.20%) in the mixed learning style. Cross tabs were utilized to summarize the students' learning styles by grade and gender (Table 3, Figures 1-2). In addition, HPC scores revealed that 12 students (48.00%) in the fourth grade had a score of 18 and above, whereas only three students (18.80%) in the fifth grade had a score of 18 and above. Cross tabs were also utilized to summarize the students' scores on HPC by grade and gender (Table 4, Figures 3-4). The average time

a parent spent helping their fourth-grade child with homework was 68 minutes, whereas the average time for the fifth-grade student dropped to 62 minutes.

A Kolmogorov-Smirnov test was used to assess the sample's normal distribution. Results showed that the homework problems for the visual learning style were $D(11) = 0.169$, $p > .05$, for the auditory learning style $D(16) = 0.139$, $p > .05$, for the kinesthetic learning style $D(10) = 0.176$, $p > .05$, and for the mixed learning style $D(5) = 0.274$, $p > 0.5$, indicating that the data were normally distributed in all groups. In addition, homogeneity of variance was assessed using Levene's Test for Equality of Variances. Levene's test showed that the group variances were equal, $F(3,38) = .269$, $p = .847$. However, the groups' sample size was not equal (11, 16, 10, and 5) and there were two outliers in the mixed learning style (Figure 5).

Therefore, a Kruskal-Wallis test was performed on the homework problems of the four learning styles (visual, auditory, kinesthetic and mixed). The differences between the rank totals of 15.32 (visual), 25.50 (auditory), 21.40 (kinesthetic) and 22.50 (mixed) were not significant, $H (3, n = 42) = 4.54$, $p = .21$. Accordingly, these results confirmed the hypothesis H_0: There are no differences in homework challenges between students in the fourth and fifth grades with a preferred learning style (visual, auditory, and kinesthetic). Consequently, the hypothesis H_1: there are differences in homework challenges between students in the fourth and fifth grades with a preferred learning style (visual, auditory, and kinesthetic) was rejected.

Homework Problems, Grade Level, and Family Structure

Inspection of Figures 3-4 revealed that there are homework problems between students in the fourth and fifth grades. Thus, an independent t-test analysis

was applied to compare homework problems of fourth grade students (M = 18.76, SD = 10.72) and fifth grade students (M = 12.06, SD = 7.08). The difference in the scores of the two groups was significant, t(39) = 2.21, p = 0.03, d = 0.71 (Table 5). Further analysis of the data revealed that the parents of male students report more homework problems than the parents of female students. Hence, a linear regression was carried out to determine how well homework problems could be predicted by the male students' grade level. There was a significant linear relationship between homework problems and the male students' grade level, F(1,20) =4.85, p = 0.04. It was found that the male students' grade level was associated with an average decrease of 8.88 points in homework problems (Table 6, Figure 6).

Moreover, an independent t-test analysis was applied to compare reported homework problems from parents that were married (M = 14.42, SD = 9.66) and single parents (M = 23.25, SD = 8.08). The difference in the scores of the two groups was significant, t(39) = -2.38, p = 0.02, d = 0.94 (Table 7). Furthermore, a linear regression was carried out to determine how well homework problems could be predicted by the family structure (married to single parents). There was a significant linear relationship between homework problems and the family structure, F(1,39) =5.68, p = 0.02. It was found that family structure was associated with an average increase of 8.83 points in reported homework problems (Table 8, Figure 7).

Parental Educational Level, Homework Problems, and Minutes Spent on Homework

The parents' educational level on homework problems and on minutes spent on homework was tested. Specifically, a linear regression was carried out to determine how well homework problems could be predicted by the parents'

educational level. There was a significant linear relationship between homework problems and the parents' educational level, $F(1,39) = 4.93$, $p = 0.03$. It was found that the parents' educational level was associated with an average decrease of 4.21 points in reported homework problems (Table 9, Figure 8). Similarly, a linear regression was carried out to determine how well minutes spent on homework could be predicted by the parents' educational level. There was a significant linear relationship between minutes spent on homework and the parents' educational level, $F(1,39) = 4.44$, $p = 0.04$. It was found that the parents' educational level was associated with an average decrease of 17.25 minutes spent on homework (Table 10, Figure 9).

In addition, a linear regression was carried out to determine how well the homework problems could be predicted by the minutes spent on homework. There was a significant linear relationship between homework problems and the minutes spent on homework in the fifth grade, $F(1,14) = 5.07$, $p = 0.041$. It was found that the minutes spent on homework were associated with an average increase of 0.08 points in homework problems in the fifth grade (Table 11, Figure 10).

IV. DISCUSSION

Preferred Learning Styles and Differences in Homework Problems

This study aimed to explore students' preferred learning style, i.e. visual, auditory, or kinesthetic in relation to their homework challenges. Analyzing the data showed that among the participating students, the auditory learning style (36.60%) had a prevalence over the other modalities. This result was in contrast with Barbe and Milone's (1980) finding who stated that approximately 30% of children in elementary school tend to have a visual learning preference, 25% an auditory learning preference, 15% a kinesthetic learning preference, and the remaining percentage a mixed learning preference. They did mention that students in early elementary grades have a preference in the auditory learning style, however this sample consisted of fourth and fifth graders which cannot be considered early elementary grades (Barbe & Milone, 1980). Another reason why the auditory learning style prevalence was not expected in this research was because fourth and fifth graders belong to generation Alpha, a generation where screens were placed in front of them from the moment they were born (Understanding Generation Alpha, n.d.).

The purpose of this study was to examine whether the parents of students in the fourth and fifth grades with a preferred learning style (visual, auditory, and kinesthetic) report that their child has fewer or more homework problems. Results showed that there were no differences in homework challenges between students in the fourth and fifth grades with a preferred learning style. Thus, the H_0 hypothesis

was confirmed and the H_1 was rejected. Research has shown that the use of the learning styles as an instructional method was found correlated with the improvement of fourth grade students in their overall academic performance (Rosdiana et al., 2022), and in mathematics (Ikawati & Kowiyah, 2021), and of fifth grade students in their narrative writing skills (Kusumawarti et al., 2020) and in science (Dewi et al., 2023). However, according to the results of this study, although the parents of students with a preferred visual learning style reported that their children had fewer homework problems than the students with a preferred style in the other modalities, the difference was not found statistically important.

Homework Problems and Parental Involvement

The question "Please state how much time you need every day to help your child to complete their homework" indicated parental involvement in terms of time spent in helping with the students' homework completion. There were parents who reported that their children usually study by themselves, thus these parents either reported zero minutes spent on homework, or less than 10 minutes. However, there were also parents who reported that they help their child for more than two hours every day to finish their homework. These findings were in contrast with the instructions issued by the Greek Ministry of National Education and Religious Affairs (2003). Among other instructions, the Ministry clearly states that a) the teacher should design homework in such a way that can be completed by the students on their own without parental help and b) the completion of the assigned homework for all courses should not exceed 30 minutes for the first and second grades, 40 minutes for the third and fourth grades and 60 minutes for the fifth and sixth grades (Ministry of National Education and Religious Affairs, 2003).

The results of this study demonstrated that the average time a parent spent per day helping their children with their homework was a little more than one hour. Nevertheless, parents of students in the fifth grade spent less time than parents with students in the fourth grade. These findings were in accordance with the global survey's results where it was found that parents with children in elementary school spend on average 7 hours per week helping their children with their homework (The Varkey Foundation, 2018). In addition, the amount of time spent on helping with homework seems to be reducing as the children grow older (Cooper et al., 2006; Des Vries et al., 2023; Patall et al., 2008; Wei et al., 2019). Cooper et al. (2006) suggested a possible explanation that the younger the children the more problems they have of ignoring external stimuli and the less ineffective they are in their study habits, thus younger students spend more time in completing their homework.

Furthermore, the outcomes of the present study revealed that parents of male students report more homework problems than parents of female students. This finding is in accordance with previous research utilizing the HPC as an instrument measuring the frequency of homework problems (Langberg et al., 2010; Worrell et al., 1999). Also, male students have been found to report higher levels of homework-related conflict and interference from their parents than female students (Dumont et al., 2012). A possible explanation for this result according to previous research could be that male students have lower task persistence in homework than female students (Silinskas & Kikas, 2019) and that female students have better homework management strategies than male students (Des Vries et al., 2023; Xu, 2006; Xu, 2010; Xu & Corno, 2006).

Parental Educational Level and Marital Status

Parental educational level was found to be negatively correlated with reported homework problems and time spent on homework. Specifically, in this study, parents with lower educational level spent more time helping their children with their homework and they reported that their children had more homework problems. This finding is in line with Dumont et al. (2012) where they found that parental education positively predicted perceived parental competence in parental homework involvement. Students' perception of parental competency in homework involvement has been associated with students' perception that the parent is autonomous supportive (Dumont et al., 2012). In addition, Silinskas et al. (2012) suggested that more educated parents use a more child-centered approach when they help their children with their homework, whereas less educated parents depend on traditional techniques which may not be as effective. Another explanation could be that the children of the more educated parents may score better on their tests and require less help with their homework (Silinskas et al., 2012).

With respect to the time spent on homework, it was also found that the more time a parent spent helping their children with homework, the more homework problems were reported by the parents. As mentioned earlier, the homework approach the parents use (traditional techniques to child-centered) might be less effective and time consuming resulting in parents reporting more homework problems. Research has shown that when parents are trained to be involved with homework, students have higher homework completion rates and report fewer

homework problems (Moè et al., 2018; Patall et al., 2008; Simweleba, & Serpell, 2020).

Regarding marital status, results showed that single mothers reported more homework problems than married mothers. The data from this research did not include achievement scores, however, in a previous study of 14 European countries, it was found that students in a single parent family have lower achievement scores than students living in a two-parent family (Hampden-Thompson & Pong, 2005). In addition, research has shown that when children have low performance at school, the parents feel compelled to be more involved in their child's homework (Silinskas et al., 2012). The child might perceive this behavior as controlling and they might feel incompetent to do the schoolwork (Orkin et al., 2017) leading to the parent reporting more homework problems. It is worth noting that single-mother families face more financial problems than two-parent families (Hampden-Thompson & Pong, 2005) and in a recent study, only 23% of single mothers reported that they were happy with their lives (Parker & Wang, 2013).

Limitations

This study has several limitations that should be considered when interpreting the results. The first limitation of this research was the sampling method. Only one private elementary school and one English language learning center in Athens responded affirmatively in participating in the study. Some of the participants were personal or work-related acquaintances of the researcher who were asked to distribute the survey to their acquaintances. Therefore, a non-probability convenience sample could not be classified as random nor representative of the population (Dunn, 2013).

Second, the two instruments that were used in combination to construct the current instrument of this study were translated in Greek by the researcher. Both the HPC and the SQLS have been found valid and reliable when they were used in their original language (Anesko et al., 1987; Foley & Epstein, 1991; Foley & Epstein, 1993; Maryani et al., 2017). In particular, the SQLS was written originally in Bahasa Indonesia and Maryani et al. (2017) translated it in English when their research was published. The Greek translation that was done by the researcher has not been tested for its reliability and validity. Thus, there might be an error introduced to the test's reliability if there were errors in translation. In addition, there was no evidence of translational equivalence also indicating a threat to the test's validity (Frick et al., 2010).

Furthermore, homework problems were measured by the ratings of one parent, presumably the one that helps the student with their homework. No other variable was considered. Neither the children nor their teachers were asked to rate the students' homework problems. In addition, the HPC has been found to measure two different features of homework: a) homework completion and b) homework management (Langberg et al., 2010; Power et al., 2006). The results of this study did not reflect these two factors and did not examine if there would be any differences depending on each factor.

Finally, this current research did not have any data on the ways homework is delivered. In generation alpha's lives, traditional homework seems irrelevant and there is little motivation in completing it, thus leading to more arguments with the parents (Amzalag, 2021). Digital learning games as an alternative to traditional homework may increase their motivation to do their homework since it is more

familiar to generation alpha's digital lives, consequently minimizing arguments and stress regarding homework in the family (Amzalag, 2021). Recent studies investigated the effect of gamifying homework on students' perceived satisfaction (Amzalag, 2021) and on parents' attitudes (Metwally et al., 2018; Metwally et al., 2021). Parents reported that the use of digital learning games instead of traditional homework improved the students' independent learning, motivation, creative thinking and coping with challenges (Amzalag, 2021) while children reported that they were happier, more active, focused, and motivated doing their gamifying homework (Metwally et al., 2018; Metwally et al., 2021), thus making the characteristics of the assigned homework an important factor.

Future Research

Suggestions for future research can be made based on this study's results and limitations. First, future research could be conducted by having a more diverse population. Participants could be elementary school children from public and private schools and from different parts of Greece covering both rural and urban areas. Thus, having a more representative sample of the population.

Second, to ensure the instruments' reliability and validity, further investigation would be needed. Standardized instruments for measuring the frequency of homework problems reported by the parents and for detecting the preferred learning style of Greek elementary school students should be utilized. Additionally, a future study where the teachers' report on the students' homework problems or even the students' self-report on their homework challenges could yield different results.

Furthermore, it would be interesting to investigate if one of the two factors of the HPC (i.e.: homework completion and homework management) is more prevalent in the students' reported homework problems than the other. Likewise, if either one of the two factors is more frequent than the other between students with a preferred learning style. Future research may reveal that students with a preferred learning style vary in their homework challenges regarding these two factors.

Finally, future research should include the increased digital literacy of generation Alpha. Generation Alpha is called "the great screen age" (Understanding Generation Alpha, n.d.) because this is a generation where during their formative years a screen was placed in front of them. Therefore, it could be interesting to investigate whether the use of digital learning games instead of traditional homework would minimize the frequency of reported homework problems and if there would be any differences between students with a preferred learning style.

V. CONCLUSION

Homework has been defined as the tasks that teachers assign to their students to be completed outside school hours (Cooper, 2015). Additionally, homework has been considered as a type of learning that happens outside of the school environment (Hong & Milgram, 2000). However, in contrast with the learning that happens at school, the students have the choice to do the homework or not, where to do the homework, and with whom. Therefore, the student's motivation and preferences do not remain the same for both environments (Hong & Milgram, 2000).

According to Hong and Milgram (2000), homework performance is the process where the student begins, makes the effort to continue working, and completes the tasks assigned by the teacher outside the school environment. Therefore, every student has a distinct set of motivations and preferences that drive them to complete the homework requirements. Homework performance as a process does not emphasize the characteristics of the assigned homework but the characteristics of the student doing the homework (Hong & Milgram, 2000).

The quality of parental involvement in homework also plays a crucial role in elementary school students' motivation to learn and their academic achievement (Dumont et al, 2012; Pomerantz et al., 2007). Research has shown that an autonomy support parental involvement is more beneficial to the student's self-development than a controlling parental involvement that hinders self-development (Ryan & Deci, 2017), enhances feelings of incompetence (Orkin et al., 2017) and leads to the

student's lower performance at school (Benckwitz et al., 2023; Dumont et al., 2014; Gonida & Cortina, 2014; Núñez et al., 2015; Núñez et al., 2017).

According to the learning style theory, every student has a unique way to learn (Fallace, 2023). By acknowledging it, it facilitates the development of learning strategies (Rolfe & Cheek, 2012), leads to effective learning (Saleem et al., 2021) and better school performance (Vizeshfar & Torabizadeh, 2018). Previous research has shown that incorporating different learning styles in classroom assists students' academic performance (Rosdiana et al., 2022; Saleem et al., 2021) and increases their class engagement (Dewi et al., 2023; Hidayatullah et al., 2022; Khoirunnisa & Iba, 2022; Litta et al., 2015; Suaib, 2019).

When homework problems are identified in early elementary years, then changes in study habits can be applied and future study problems may be prevented (Anesko et al., 1987). Therefore, the present study tried to investigate if homework problems vary in fourth and fifth grade elementary students with different preferred learning styles. Results showed that there were no differences in homework problems in students with different preferred learning styles. There was prevalence of the auditory learning style in contrast with previous research (Barbe & Milone, 1980; Putra & Pratiwi, 2020). Further research was suggested into incorporating the teachers' report on homework problems, on examining the two factors of the HPC and on the ways homework is delivered.

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Table 1

Demographic Characteristics of Participants - Parents

Parental characteristics	Mothers		Fathers		Total Sample	
	n	%	n	%	n	%
	39	95.10%	2	4.90%	41	100%
Family Structure						
Married	31	79,49%	2	100,00%	33	80,49%
Single parents	8	20,51%	0	0,00%	8	19,51%
Age Group						
35-44	26	66,70%	0	0,00%	26	63,40%
45-54	13	33,30%	2	100,00%	15	36,60%
Educational Status						
High School	8	20,50%	0	0,00%	8	19,50%
Undergraduate	17	43,60%	0	0,00%	17	41,50%
Graduate	14	35,90%	1	50,00%	15	36,60%
Other	0	0,00%	1	50,00%	1	2,40%
Employed						
Yes	31	79,50%	2	100,00%	33	80,50%
No	8	20,50%	0	0,00%	8	19,50%
Employment Status						
Full Time	28	90,30%	2	100,00%	30	90,90%
Part Time	3	9,70%	0	0,00%	3	9,10%
Work from home						
Yes	9	25,00%	1	50,00%	10	26,30%
No	27	75,00%	1	50,00%	28	73,70%
Spouse’s Age group						
35-44	14	36,80%	1	50,00%	15	37,50%
45-54	24	63,20%	1	50,00%	25	62,50%
Spouse's Educational Status						
High School	9	23,70%	0	0,00%	9	22,50%
Undergraduate	19	50,00%	1	50,00%	20	50,00%
Graduate	9	23,70%	1	50,00%	10	25,00%
Other	1	2,60%	0	0,00%	1	2,50%
Spouse Employed						
Yes	38	100,00%	2	100,00%	40	100,00%
Spouse's Employment Status						
Full Time	38	100,00%	2	100,00%	40	100,00%
Spouse's Work from home						
Yes	6	16,70%	1	50,00%	7	18,40%
No	30	83,30%	1	50,00%	31	81,60%

Table 2

Demographic Characteristics of Participants – Children

Children's characteristics		Female		Male		Total Sample	
		n	%	n	%	n	%
		19	46.30%	22	53.70%	41	100%
Grade							
	4th	10	52,60%	15	68,20%	25	61,00%
	5th	9	47,40%	7	31,80%	16	39,00%
Siblings							
	Yes	11	57,90%	19	86,40%	30	73,20%
	No	8	42,10%	3	13,60%	11	26,80%

Table 3

Students' Learning Style Preferences

Children's characteristics	Grade 4th				Grade 5th				Total Sample	
	Female		Male		Female		Male			
	n	%	n	%	n	%	n	%	n	%
	10	40.00%	15	60.00%	9	56.30%	7	43.80%	41	100.00%
Learning style										
Visual	4	57.10%	3	42.90%	1	25.00%	3	75,00%	11	26.80%
Auditory	3	37.50%	5	62.50%	6	85.70%	1	14.30%	15	36.60%
Kinesthetic	2	28.60%	5	71.40%	1	33.30%	2	66.70%	10	24.40%
Mixed	1	33.30%	2	66.70%	1	50.00%	1	50.00%	5	12.20%

Table 4

Students' HPC Scores

Children's characteristics	Grade 4th				Grade 5th				Total Sample	
	Female		Male		Female		Male			
	n	%	n	%	n	%	n	%	n	%
	10	40.00%	15	60.00%	9	56.30%	7	43.80%	41	100.00%
HPC scores										
0-17	7	53.80%	6	46.20%	7	53.80%	6	46,20%	26	63.40%
18-30	2	22.20%	7	77.80%	2	66.70%	1	33,30%	12	29.30%
30+	1	33.30%	2	66.70%	0	0.00%	0	0.00%	3	7.30%

Table 5

Independent Samples T-Test Comparing Homework Problems of 4th and 5th Graders

Group Statistics

Conditions	N	Mean	Std. Deviation	Std. Error Mean
Homework Problems				
4th Grade	25	18.76	10.72	2.14
5th Grade	16	12.06	7.09	1.78

Levene's Test for Equality of Variances			t-test for Equality of Means						
Independent Samples Test								95% CI	
Conditions	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	LL	UL
Homework Problems									
Equal variances assumed	3.455	.071	2.205	39	.033	6.698	3.037	.554	12.841
Equal variances not assumed			2.409	38.926	.021	6.698	2.781	1.073	12.322

Note. Levene's test is not significant, so the assumption for equality of variances is satisfied

Table 6

Male Students' Grade Level on Homework Problems

Variable	Model 1		
	B	β	SE
Constant	29.610*		5.637
Homework Problems[a]	-8.876**	-.442	4.032
R^2	.195		

Note. N = 22

[a]Fourth grade = 1, fifth grade = 2

*p <.001, **p = .04

Table 7

Independent Samples T-Test Comparing Homework Problems in Married and Single Parent Households

Group Statistics

Conditions		N	Mean	Std. Deviation	Std. Error Mean
Homework Problems					
	Married	33	14.42	9.663	1.682
	Single Parents	9	23.25	8.084	2.858

Levene's Test for Equality of Variances			t-test for Equality of Means						
Independent Samples Test								95% CI	
Conditions	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	LL	UL
Homework Problems									
Equal variances assumed	.027	.870	-2.383	39	.022	-8.826	3.704	-16.318	-1.333
Equal variances not assumed			-2.661	12.364	.020	-8.826	3.317	-16.028	-1.623

Note. Levene's test is not significant, so the assumption for equality of variances is satisfied

Table 8

Family Structure on Homework Problems

Variable	Model 1		
	B	β	SE
Constant	5.598		4.664
Homework Problems[a]	8.826*	.356	3.704
R^2	.127		

Note. N = 41

[a]Married = 1, single parents = 2

*p = .02

Table 9

Educational Status on Homework Problems

Variable	Model 1		
	B	β	SE
Constant	25.487*		4.458
Homework Problems[a]	-4.209**	-0.335	1.895
R^2	.112		

Note. N = 41

[a] High-school = 1, undergraduate = 2, graduate = 3, other = 4

*p <.001, **p = .032

Table 10

Educational Status on Minutes Spent on Homework

Variable	Model 1		
	B	β	SE
Constant	104.011*		19.259
Min Spent on Homework[a]	-17.247**	-0.320	8.185
R^2	.102		

Note. N = 41

[a] High school = 1, undergraduate = 2, graduate = 3, other = 4

*p <.001, **p = .042

Table 11

Minutes Spent on Homework (5th Grade) on Homework Problems

Variable	Model 1		
	B	β	SE
Constant	7.049*		2.725
Homework Problems	.081**	-.516	.036
R^2	.266		

Note. N = 16
*p = .022, **p = .041

Figure 1

Students' Learning Style Preferences Grade 4th

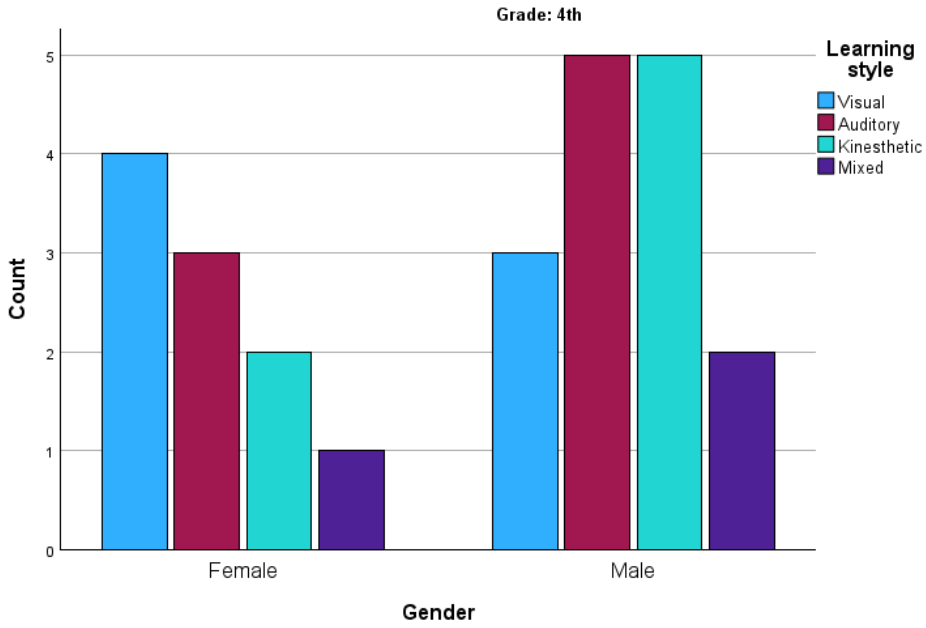


Figure 2

Students' Learning Style Preferences Grade 5th

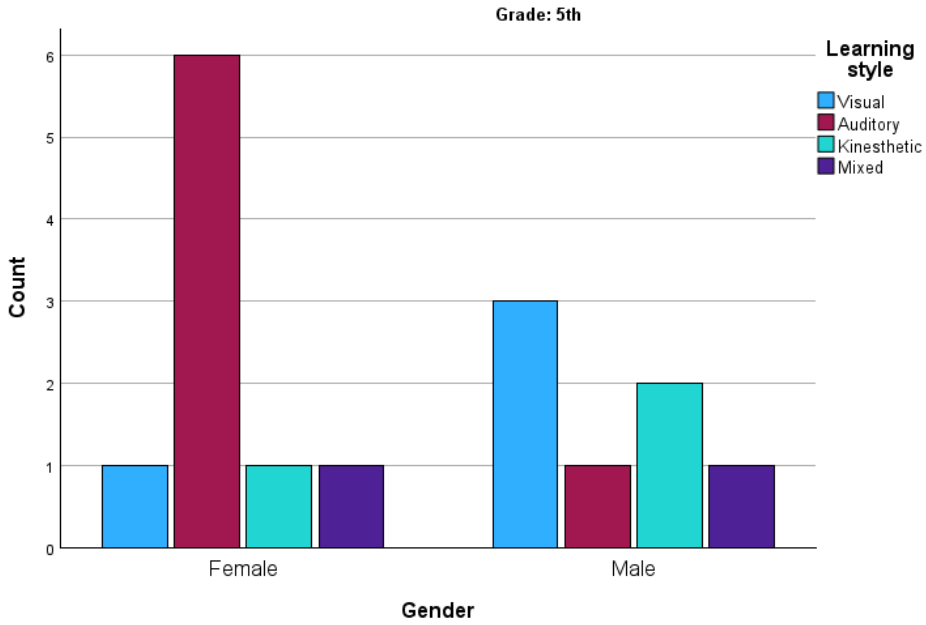


Figure 3

Students' HPC Scores Grade 4th

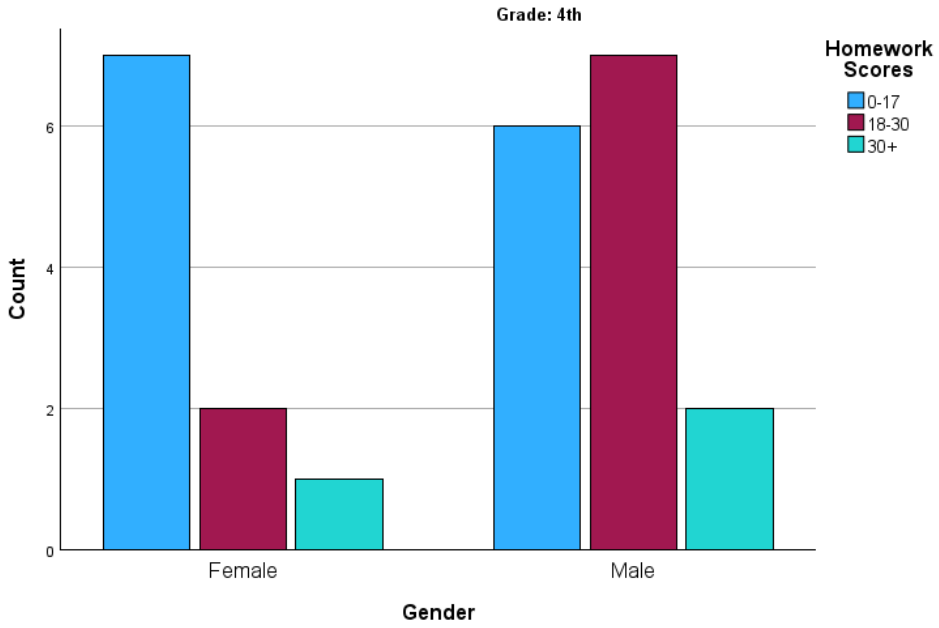


Figure 4

Students' HPC Scores Grade 5th

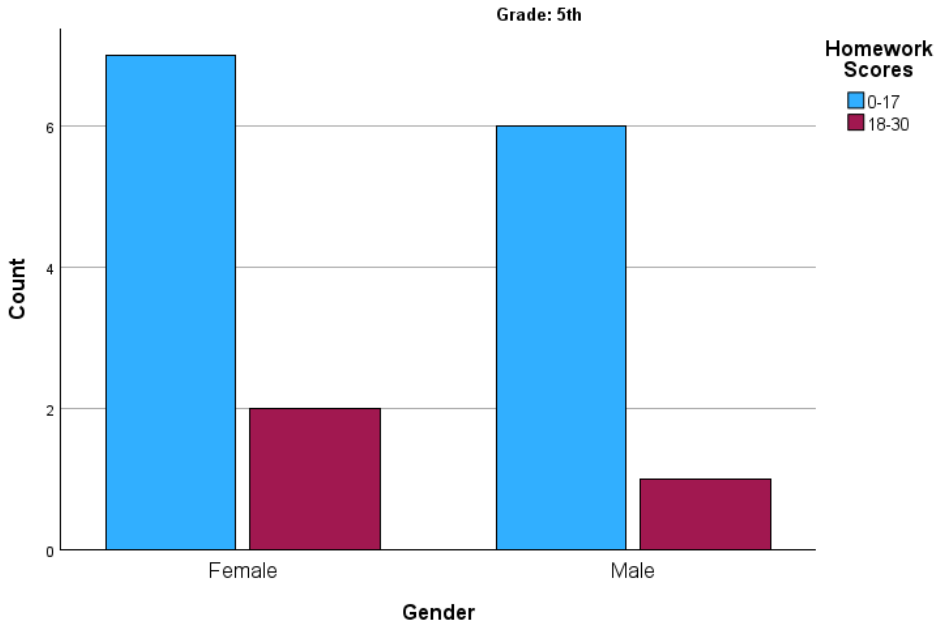


Figure 5

Sample's Outliers

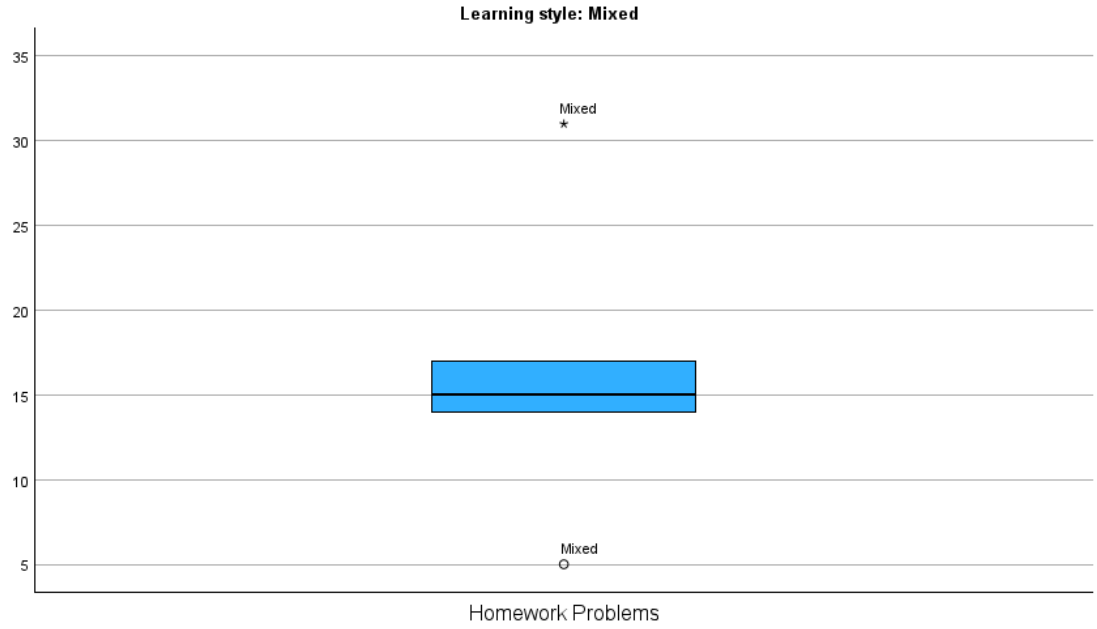
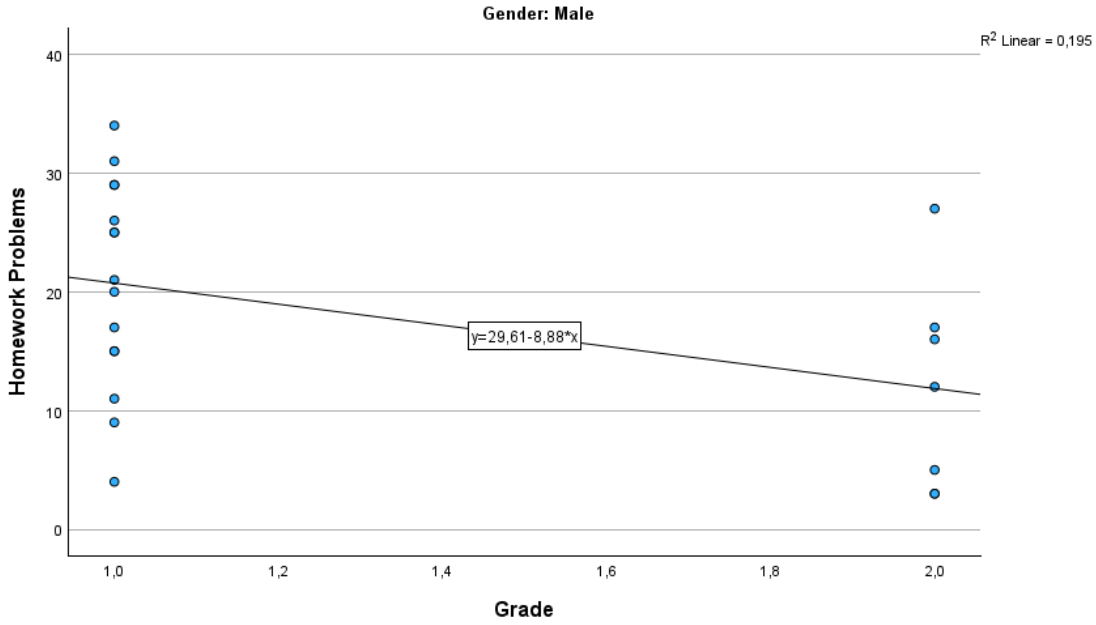


Figure 6

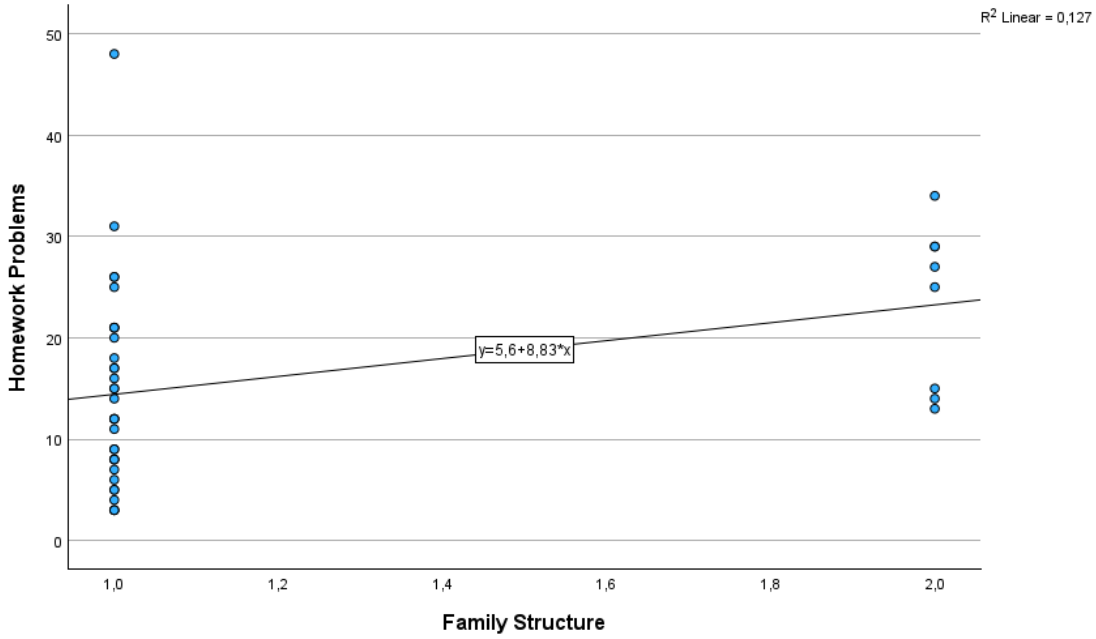
Male Students' Grade Level on Homework Problems



Note: Fourth grade = 1, fifth grade = 2

Figure 7

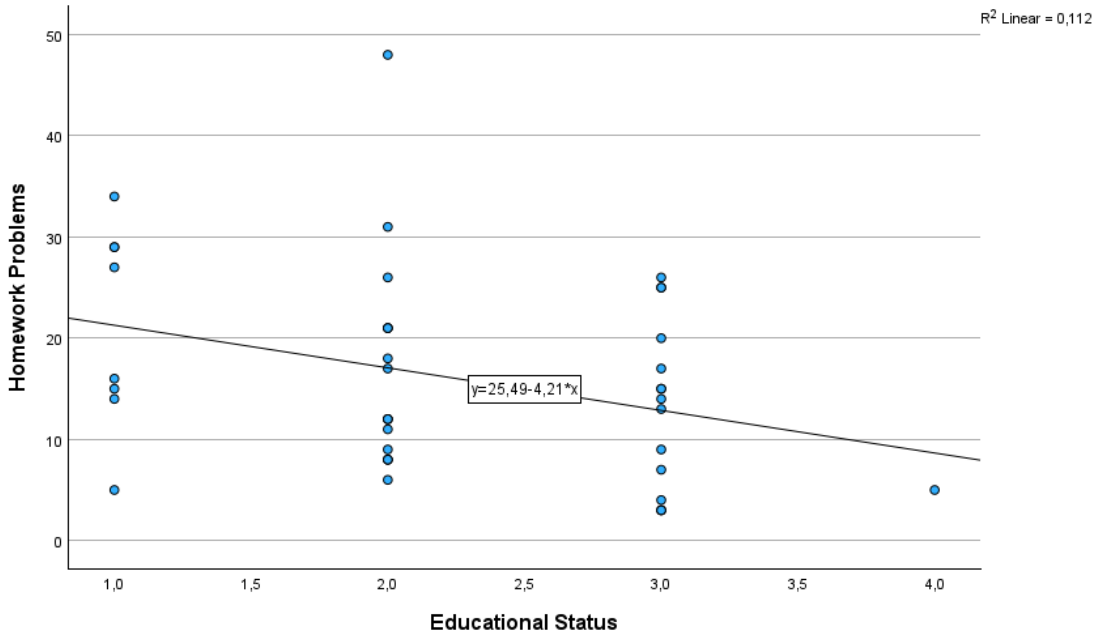
Family Structure on Homework Problems



Note: Married = 1, single parents = 2

Figure 8

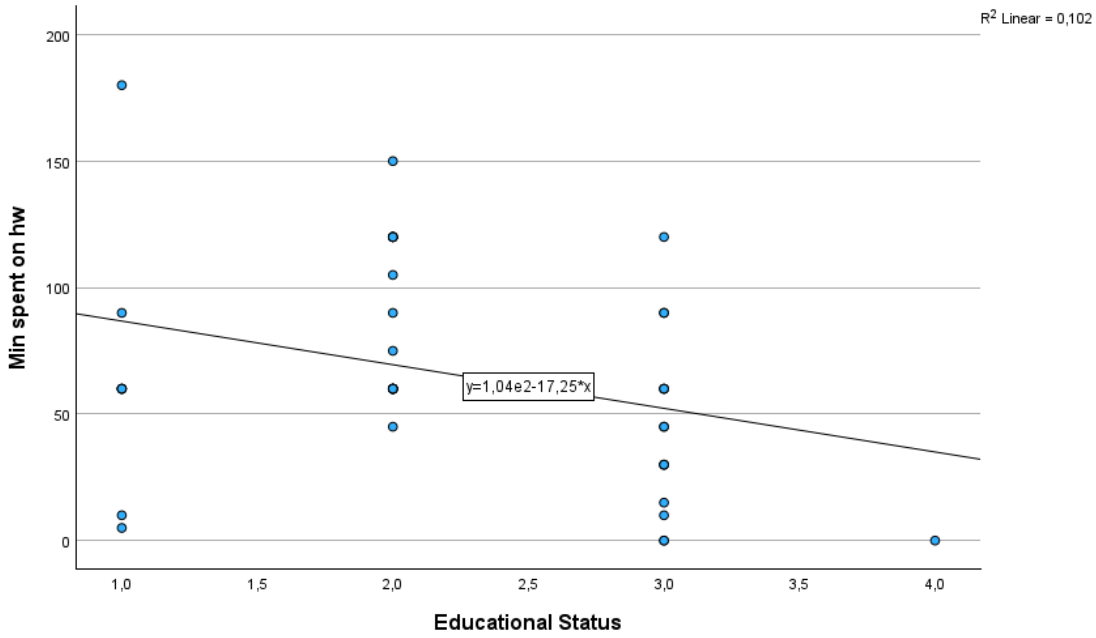
Educational Status on Homework Problems



Note: High school = 1, undergraduate = 2, graduate = 3, other = 4

Figure 9

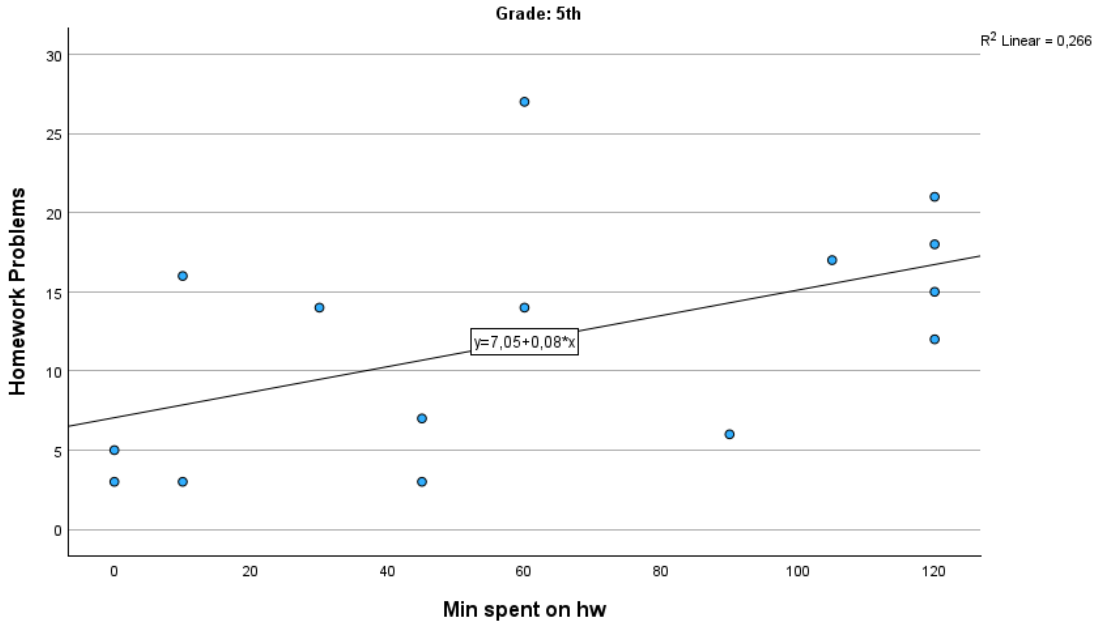
Educational Status on Minutes Spent on Homework



Note: High school = 1, undergraduate = 2, graduate = 3, other = 4

Figure 10

Minutes Spent on Homework (5th Grade) on Homework Problems



Appendix A

Ανακοίνωση

Διεξάγεται μία έρευνα στα πλαίσια ολοκλήρωσης μεταπτυχιακών σπουδών στην Εφαρμοσμένη Σχολική Ψυχολογία στο Αμερικάνικο Κολλέγιο Ελλάδας η οποία αποσκοπεί στο να βρει αν υπάρχουν διαφορές στα προβλήματα που μπορεί να έχει το παιδί με την ολοκλήρωση των σχολικών του εργασιών στο σπίτι σε σχέση με τον μαθησιακό τύπο (οπτικός, ακουστικός, κιναισθητικός) που προτιμά κάθε παιδί να διαβάζει.

Η έρευνα απευθύνεται σε γονείς και παιδιά δημοτικού των τάξεων Δ’ και Ε’ όπου τους ανατίθενται σχολικές εργασίες για το σπίτι και αποτελείται από δύο ενότητες. Η πρώτη ενότητα θα χρειαστεί να απαντηθεί από τον γονέα, ενώ η δεύτερη από το παιδί. Για την συμπλήρωση της κάθε ενότητας θα χρειαστούν περίπου 10-15 λεπτά από το χρόνο τους. Όλες οι απαντήσεις είναι ανώνυμες και η συμμετοχή είναι εθελοντική.

Θα παρακαλούσα τη συνδρομή σας προκειμένου να στείλετε μέσω ηλεκτρονικής αλληλογραφίας τον παρακάτω σύνδεσμο που περιέχει το ερωτηματολόγιο στους γονείς των παιδιών της Δ’ και Ε΄ δημοτικού για να το συμπληρώσουν μαζί με τα παιδιά τους.

Περισσότερες πληροφορίες για τους ενδιαφερόμενους αναγράφονται στο εισαγωγικό σημείωμα της έρευνας η οποία είναι διαθέσιμη με την επιλογή του παρακάτω συνδέσμου.

Θερμή παράκληση όπως μου αποστείλετε με mail τη θετική ή αρνητική απάντησή σας για τη συμμετοχή του σχολείου σας στην παρούσα έρευνα.

Appendix B

Announcement

A study is being conducted in partial fulfillment of the requirements of the degree of MA in Applied Educational Psychology at the American College of Greece. The purpose of this research is to find if there are any differences in homework challenges between students with a preferred learning style (visual, auditory, and kinesthetic).

This research is addressed to parents and elementary school children in fourth and fifth grades where they are assigned homework, and it consists of two sections. Parents will answer the first section and their children will answer the second one. Each section will need approximately 10-15 minutes of their time to complete. All responses are anonymous, and participation is voluntary.

I would request your assistance in sending the following link by e-mail to the parents of the 4th and 5th grade students. The link contains the questionnaire so that the parents can complete it together with their children.

Additional information is posted on the survey's introductory paragraph which is available at the link below.

Please e-mail me back to inform me whether you approve or not of your school's participation in the study.

Appendix C

Διαδικτυακή Έρευνα

Η παρούσα έρευνα αποσκοπεί στο να βρει αν υπάρχουν διαφορές στα προβλήματα που μπορεί να έχει το παιδί με την ολοκλήρωση των σχολικών του εργασιών στο σπίτι σε σχέση με τον μαθησιακό τύπο (οπτικός, ακουστικός, κιναισθητικός) που προτιμά κάθε παιδί να διαβάζει. Ο οπτικός μαθησιακός τύπος είναι αυτός προτιμάει να διαβάζει, ο ακουστικός προτιμάει να ακούει και ο κιναισθητικός να κάνει πράξη αυτά που μαθαίνει.

Το ερωτηματολόγιο αποτελείται από δύο ενότητες. Η πρώτη ενότητα θα συμπληρωθεί από εσάς και αφορά στο πως αντιμετωπίζει το παιδί τις σχολικές εργασίες στο σπίτι. Στην αρχή της ενότητας υπάρχουν ερωτήσεις δημογραφικού χαρακτήρα, οι οποίες θα χρησιμοποιηθούν καθαρά για στατιστικούς σκοπούς. Η δεύτερη ενότητα θα συμπληρωθεί από το παιδί σας και περιέχει ερωτήσεις σχετικά με τον προτιμώμενο μαθησιακό τύπο (οπτικός, ακουστικός, κιναισθητικός). Η κάθε ενότητα θα χρειαστεί 10-15 λεπτά για την συμπλήρωσή της.

Όλες οι απαντήσεις είναι ανώνυμες. Η πρόσβαση στο αρχείο απαντήσεων γίνεται μόνο με τη χρήση κωδικού πρόσβασης. Δυνατότητα πρόσβασης στο αρχείο απαντήσεων θα έχουν μόνο η αρχική ερευνήτρια, Ποιμενίδη Δήμητρα και η εποπτεύουσα καθηγήτρια αυτής της εργασίας, Dr. Alessandra Sax.

Η δική σας συμμετοχή και η συμμετοχή του παιδιού σας είναι απολύτως εθελοντική και μπορείτε να παραιτηθείτε οποιαδήποτε στιγμή επιθυμείτε χωρίς καμία επιβάρυνση. Σε περίπτωση παραίτησης από τη συμμετοχή σας στην έρευνα οποιαδήποτε πληροφορία είχε καταχωρηθεί θα διαγραφεί μόνιμα από το αρχείο.

Αν έχετε οποιαδήποτε ερώτηση σχετικά με την παρούσα έρευνα, μπορείτε να επικοινωνήσετε: Ποιμενίδη Δήμητρα, τηλ. 6932831233, e-mail: D.Pimenidi@acg.edu. Επιπλέον μπορείτε να επικοινωνήσετε με την εποπτεύουσα καθηγήτρια αυτής της εργασίας: Dr. Alessandra Sax EdD, LMSW, Associate Professor, Part-time Psychology Faculty, οδός Γραβιάς 6, 15342, Αγία Παρασκευή, τηλ. 210 600 9800, (εσωτερικό 1517), e-mail: ASax@acg.edu.

Η παρούσα έρευνα έχει ελεγχθεί και εγκριθεί από το Institutional Review Board του Αμερικάνικου Κολλεγίου Ελλάδος.

Σας ευχαριστώ θερμά για τον χρόνο σας!

Επιλέγοντας "Συμφωνώ" δίνετε τη συγκατάθεσή σας για τη συμμετοχή σας και τη συμμετοχή του παιδιού σας στην έρευνα

Συμφωνώ

1η Ενότητα – Παρακαλώ να συμπληρωθεί από τον γονέα

1. Παρακαλώ επιλέξτε: Είστε

   Μητέρα

   Πατέρας

2. Παρακαλώ να αναφέρετε ποια είναι η οικογενειακή σας κατάσταση (π.χ. παντρεμένοι, μονογονεϊκή οικογένεια, παιδιά από προηγούμενους γάμους)
3. Παρακαλώ επιλέξτε την ηλικία σας

   25-34

   35-44

   45-54

   55-64

   65+

4. Παρακαλώ να συμπληρώσετε πόση ώρα ασχολείστε με το παιδί για να ολοκληρωθούν τα μαθήματα της ημέρας.
5. Ποιο είναι το μορφωτικό σας επίπεδο; Παρακαλώ επιλέξτε ένα από τα παρακάτω:

   Απόφοιτος Λυκείου

   Απόφοιτος Πανεπιστημίου

   Μεταπτυχιακές Σπουδές

   Άλλο, παρακαλώ αναφέρετε
6. Εργάζεστε;

   Ναι

   Όχι
7. Ποια είναι η απασχόλησή σας;

   Πλήρης

   Μερική
8. Εργάζεστε έστω και μία μέρα με τηλεργασία;

   Ναι, παρακαλώ αναφέρετε πόσες

   Όχι
9. Παρακαλώ να συμπληρώσετε την ηλικία του παιδιού σας.
10. Σε ποια τάξη είναι;

    Δ’

    Ε’
11. Ποιο είναι το γένος του παιδιού;

    Αγόρι

    Κορίτσι

12. Έχει κάποια μαθησιακή δυσκολία;

    Ναι, παρακαλώ διευκρινίστε

    Όχι

13. Έχει αδέλφια;

    Ναι

    Όχι

Οι παρακάτω ερωτήσεις παρακαλούμε να απαντηθούν σε περίπτωση όπου ισχύουν

14. Παρακαλώ συμπληρώστε ποια είναι η ηλικία των αδελφιών;
15. Σε ποια τάξη πηγαίνουν;
16. Ποια είναι η ηλικία του συζύγου;

    25-34

    35-44

    45-54

    55-64

    65+

17. Μορφωτικό επίπεδο συζύγου;

    Απόφοιτος Λυκείου

    Απόφοιτος Πανεπιστημίου

    Μεταπτυχιακές Σπουδές

    Άλλο, παρακαλώ αναφέρετε

18. Ο/Η σύζυγος εργάζεται;

    Ναι

    Όχι

19. Ποια είναι η απασχόλησή του/της

Πλήρης

Μερική

20. Εργάζεται έστω και μία μέρα με τηλεργασία;

Ναι, παρακαλώ αναφέρετε πόσες

Όχι

Οι παρακάτω ερωτήσεις αφορούν στη συχνότητα των προβλημάτων που μπορεί να έχει το παιδί με τις σχολικές εργασίες στο σπίτι. Παρακαλώ να επιλέξετε την απάντηση που ταιριάζει περισσότερο.

21. Αποτυγχάνει να φέρει στο σπίτι τις σχολικές εργασίες που του/της έχουν ανατεθεί και τα απαραίτητα υλικά.

Ποτέ

Κάποιες φορές

Συχνά

Πολύ συχνά

22. Δεν γνωρίζει ακριβώς ποια σχολική εργασία για το σπίτι του/της έχει ανατεθεί.

Ποτέ

Κάποιες φορές

Συχνά

Πολύ συχνά

23. Αρνείται ότι έχει να κάνει κάποια σχολική εργασία στο σπίτι.

Ποτέ

Κάποιες φορές

Συχνά

Πολύ συχνά

24. Αρνείται να κάνει την σχολική εργασία για το σπίτι.

    Ποτέ

    Κάποιες φορές

    Συχνά

    Πολύ συχνά

25. Γκρινιάζει ή παραπονιέται για την σχολική εργασία για το σπίτι.

    Ποτέ

    Κάποιες φορές

    Συχνά

    Πολύ συχνά

26. Πρέπει να του υπενθυμίζουμε να καθίσει και να ξεκινήσει την σχολική εργασία για το σπίτι.

    Ποτέ

    Κάποιες φορές

    Συχνά

    Πολύ συχνά

27. Αναβάλει, καθυστερεί να ξεκινήσει να κάνει τη σχολική εργασία για το σπίτι (περιμένει μέχρι την τελευταία στιγμή).

    Ποτέ

    Κάποιες φορές

    Συχνά

    Πολύ συχνά

28. Δεν κάνει τις σχολικές εργασίες για το σπίτι εκτός και αν είναι κάποιος στο δωμάτιο.

    Ποτέ

    Κάποιες φορές

    Συχνά

    Πολύ συχνά

29. Δεν κάνει τις σχολικές εργασίες για το σπίτι σε ικανοποιητικό βαθμό εκτός και αν είναι κάποιος στο δωμάτιο. (Δεν κάνει τις σχολικές εργασίες για το σπίτι εκτός και αν κάποιος τις κάνει μαζί του/της)

    Ποτέ

    Κάποιες φορές

    Συχνά

    Πολύ συχνά

30. Ονειροπολεί ή παίζει με αντικείμενα την ώρα που κάνει τη σχολική εργασία για το σπίτι.

    Ποτέ

    Κάποιες φορές

    Συχνά

    Πολύ συχνά

31. Αποσπάται εύκολα από θορύβους ή από δραστηριότητες άλλων.

    Ποτέ

    Κάποιες φορές

    Συχνά

    Πολύ συχνά

32. Απογοητεύεται εύκολα από τις σχολικές εργασίες που έχει να κάνει για το σπίτι.

    Ποτέ

    Κάποιες φορές

    Συχνά

    Πολύ συχνά

33. Αποτυγχάνει να ολοκληρώσει τις σχολικές εργασίες για το σπίτι.

    Ποτέ

    Κάποιες φορές

    Συχνά

    Πολύ συχνά

34. Χρειάζεται ασυνήθιστα πολύ χρόνο για να κάνει τις σχολικές εργασίες για το σπίτι.

    Ποτέ

    Κάποιες φορές

    Συχνά

    Πολύ συχνά

35. Ανταποκρίνεται άσχημα όταν ο γονιός του/της λέει να διορθώσει τις σχολικές εργασίες για το σπίτι.

    Ποτέ

    Κάποιες φορές

    Συχνά

    Πολύ συχνά

36. Οι σχολικές εργασίες που γράφει στο σπίτι είναι ακατάστατες ή απρόσεκτες

Ποτέ

Κάποιες φορές

Συχνά

Πολύ συχνά

37. Βιάζεται να τελειώσει τις σχολικές εργασίες για το σπίτι και κάνει λάθη απροσεξίας

Ποτέ

Κάποιες φορές

Συχνά

Πολύ συχνά

38. Δείχνει μη ικανοποιημένος-η με το αποτέλεσμα ακόμα και όταν έχει κάνει καλή δουλειά

Ποτέ

Κάποιες φορές

Συχνά

Πολύ συχνά

39. Ξεχνάει να πάει την εργασία πίσω στην τάξη

Ποτέ

Κάποιες φορές

Συχνά

Πολύ συχνά

40. Αποτυγχάνει εσκεμμένα να πάει την εργασία πίσω στην τάξη.

Ποτέ

Κάποιες φορές

Συχνά

Πολύ συχνά (Anesko et al., 1987)

2η Ενότητα – Συμπληρώνεται από το παιδί. Παρακαλώ να επιλέξεις την απάντηση που σου ταιριάζει πιο πολύ.

Ονομάζομαι Δήμητρα Ποιμενίδη και με το παρακάτω ερωτηματολόγιο θα προσπαθήσω να βρω ποιος είναι ο μαθησιακός τύπος με τον οποίο προτιμάς να διαβάζεις (οπτικός, ακουστικός, κιναισθητικός). Ο οπτικός μαθησιακός τύπος είναι αυτός προτιμάει να διαβάζει, ο ακουστικός προτιμάει να ακούει και ο κιναισθητικός να κάνει πράξη αυτά που μαθαίνει.

Το ερωτηματολόγιο αποτελείται από δύο ενότητες. Η πρώτη ενότητα έχει ήδη συμπληρωθεί από τον γονιό σου και συμφώνησε να συμμετάσχεις και εσύ. Οι ερωτήσεις αφορούσαν στο πως αντιμετωπίζεις τις σχολικές εργασίες στο σπίτι. Για να συμπληρώσεις τη δική σου ενότητα θα χρειαστείς 10-15 λεπτά. Με τα ερωτηματολόγια αυτά θα προσπαθήσουμε να βρούμε αν υπάρχουν διαφορές στα προβλήματα που μπορεί να έχει κάποιο παιδί με τα διαβάσματά του στο σπίτι σε σχέση με τον μαθησιακό τύπο που προτιμά κάθε παιδί να διαβάζει.

Οι απαντήσεις είναι ανώνυμες και οι απαντήσεις θα είναι ορατές μόνο σε μένα και στην καθηγήτρια που με εποπτεύει την Dr. Alessandra Sax. Η συμμετοχή σου είναι απολύτως εθελοντική και μπορείς να σταματήσεις οποιαδήποτε στιγμή θέλεις χωρίς να δημιουργηθεί κανένα πρόβλημα. Όλες οι απαντήσεις που θα έχεις καταχωρήσει θα διαγραφούν μόνιμα.

Αν έχεις οποιαδήποτε ερώτηση σχετικά με την παρούσα έρευνα, μπορείς να με πάρεις τηλέφωνο: Ποιμενίδη Δήμητρα, τηλ. 6932831233, ή να στείλεις e-mail: D.Pimenidi@acg.edu. Επιπλέον μπορείς να επικοινωνήσεις και με την καθηγήτρια

μου: Dr. Alessandra Sax, τηλ. 210 600 9800, (εσωτερικό 1517), e-mail: ASax@acg.edu.

Επιλέγοντας "Συμφωνώ" δίνεις τη συγκατάθεσή σου για τη συμμετοχή σου στην έρευνα. Σε περίπτωση που δεν επιθυμείς να συμμετάσχεις απλώς κλείσε τον browser.

Συμφωνώ

1. Κρατάω σημειώσεις στο τετράδιο μου συχνά και προσεκτικά.

   Ναι

   Όχι

2. Σπανίως κρατάω σημειώσεις από αυτά που μου λέει ο δάσκαλος / η δασκάλα.

   Ναι

   Όχι

3. Μόλις τελειώσω το τεστ, ελέγχω προσεκτικά τις απαντήσεις.

   Ναι

   Όχι

4. Προτιμώ να ακούω τον δάσκαλο / τη δασκάλα να εξηγεί το μάθημα στην τάξη παρά να το διαβάζω από το βιβλίο.

   Ναι

   Όχι

5. Μου αρέσει πιο πολύ να βλέπω πίνακες, ζωγραφιές, από το να ακούω μουσική.

   Ναι

   Όχι

6. Όταν ο δάσκαλος / η δασκάλα εξηγεί κάτι σημαντικό, μιλάω με τον/την φίλο-η μου και δεν έχω χρόνο να κρατάω σημειώσεις.

   Ναι

   Όχι

7. Μπορώ να συγκεντρώνομαι στο διάβασμα ακόμα και όταν έχει θόρυβο στην τάξη, ή στο σπίτι.

   Ναι

   Όχι

8. Δεν μου αρέσει να βλέπω πίνακες, ζωγραφιές. Μου αρέσει πιο πολύ η μουσική

   Ναι

   Όχι

9. Αν δεν κρατήσω σημειώσεις, ξεχνάω τι είπε ο δάσκαλος / η δασκάλα.

   Ναι

   Όχι

10. Μόλις τελειώσω το τεστ, το δίνω αμέσως στον δάσκαλο / στη δασκάλα.

    Ναι

    Όχι

11. Απαντάω στις ερωτήσεις με σύντομες και απαραίτητες απαντήσεις.

    Ναι

    Όχι

12. Είμαι λιγότερο ενεργητικός στο να απαντάω στις ερωτήσεις του δασκάλου / της δασκάλας.

    Ναι

Όχι

13. Απαντάω στις ερωτήσεις του δασκάλου / της δασκάλας πολύ γρήγορα.

    Ναι

    Όχι

14. Συγκεντρώνομαι δύσκολα για να διαβάσω όταν έχει φασαρία στην τάξη, στο σπίτι.

    Ναι

    Όχι

15. Δεν θυμάμαι εύκολα τις προφορικές ερωτήσεις από τον δάσκαλο / τη δασκάλα.

    Ναι

    Όχι

16. Καταλαβαίνω πιο εύκολα την ερώτηση όταν είναι γραμμένη.

    Ναι

    Όχι

17. Προτιμώ να βλέπω τις εικόνες στο βιβλίο από τα να ακούω την εξήγηση του δασκάλου / της δασκάλας.

    Ναι

    Όχι

18. Δίνω ολοκληρωμένες απαντήσεις στις ερωτήσεις των άλλων.

    Ναι

    Όχι

19. Το βρίσκω πιο εύκολο να θυμάμαι τα μαθήματα αν τα λέω στον εαυτό μου όταν διαβάζω.

Ναι

Όχι

20. Στο διάλλειμα περνάω πιο πολύ ώρα διαβάζοντας παρά με τους φίλους μου.

    Ναι

    Όχι

21. Κάνω πιο εύκολα επαναλήψεις στα μαθήματά μου όταν ακούω μουσική και τραγούδια.

    Ναι

    Όχι

22. Το βρίσκω δύσκολο να θυμάμαι τα μαθήματα όταν τα διαβάζω δυνατά.

    Ναι

    Όχι

23. Όταν λέω τη γνώμη μου ή απαντάω σε ερώτηση, μιλάω γρήγορα και καθαρά.

    Ναι

    Όχι

24. Δεν μπορώ να επαναλάβω με ευκολία αυτά που μας λέει ο δάσκαλος / η δασκάλα.

    Ναι

    Όχι

25. Στο διάλλειμα προτιμώ να είμαι με τους φίλους μου.

    Ναι

    Όχι

26. Μου αρέσει να κρατάω σημειώσεις από το να μιλάω σε ομαδικές συζητήσεις.

    Ναι

    Όχι

27. Μουρμουράω όταν διαβάζω.

    Ναι

    Όχι

28. Προτιμώ να γράφω τις ιδέες μου παρά να τις λέω.

    Ναι

    Όχι

29. Δυσκολεύομαι να καταλάβω το μάθημα όταν περιέχει σχέδια, χάρτες ή γράφημα.

    Ναι

    Όχι

30. Όταν διαβάζω τα μαθήματά μου, θέλω να έχει ησυχία

    Ναι

    Όχι

31. Όταν έχω ομαδική εργασία υποστηρίζω ενεργά την άποψή μου

    Ναι

    Όχι

32. Μιλάω στην τάξη χωρίς δυσκολία

    Ναι

    Όχι

33. Όταν ψάχνω πληροφορίες για κάτι, προτιμώ να μου το διαβάζουν παρά να το διαβάζω μόνος/η μου

    Ναι

    Όχι

34. Καταλαβαίνω καλύτερα το μάθημα όταν είναι σε εικόνες, γραφήματα ή χάρτες

    Ναι

    Όχι

35. Μου αρέσει να λέω ιστορίες αλλά δυσκολεύομαι να τις γράψω

    Ναι

    Όχι

36. Όταν ψάχνω πληροφορίες για κάτι, προτιμώ να το διαβάζω μόνος/η μου παρά να μου το διαβάζουν

    Ναι

    Όχι

37. Όταν μιλάω με φίλους ή δασκάλους πρέπει να είμαι κοντά τους

    Ναι

    Όχι

38. Κάνω καλά γράμματα και διαβάζονται εύκολα

    Ναι

    Όχι

39. Για να διαβάζω πιο εύκολα, χρησιμοποιώ το δάκτυλό μου για να δείχνω τη λέξη που διαβάζω.

    Ναι

Όχι

40. Όταν μιλάω σε άλλους ανθρώπους δεν χρειάζεται να τους αγγίζω πρώτα.

    Ναι

    Όχι

41. Μου αρέσει να δημιουργώ ή να διορθώνω κάτι με τα χέρια μου

    Ναι

    Όχι

42. Είμαι ήρεμος/η όταν ακούω τον δάσκαλο / τη δασκάλα να εξηγεί

    Ναι

    Όχι

43. Μαθαίνω καλύτερα όταν μπορώ να πιάσω τα πράγματα που μελετάω

    Ναι

    Όχι

44. Δεν μαθαίνω το μάθημα πιο εύκολα ακόμα και όταν κάνω εξάσκηση πάνω σε αυτά που μαθαίνω

    Ναι

    Όχι

45. Μου είναι πιο εύκολο να καταλάβω το μάθημα όταν κάνω εξάσκηση πάνω σε αυτά που μαθαίνω

    Ναι

    Όχι

46. Όταν διαβάζω, δεν χρειάζεται να χρησιμοποιώ το δάκτυλό μου για να δείχνω τη λέξη που διαβάζω

    Ναι

Όχι

47. Όταν θέλω να ρωτήσω κάτι ή να μιλήσω με άλλους, πρέπει να ακουμπήσω τον άλλον πρώτα

    Ναι

    Όχι

48. Για να μάθω κάτι καλά, δεν χρειάζεται να αγγίζω τα πράγματα που μελετάω

    Ναι

    Όχι

49. Δεν κάνω καλά γράμματα όταν γράφω

    Ναι

    Όχι

50. Δεν χρειάζεται να είμαι κοντά στον δάσκαλο / στη δασκάλα ή στον/η φίλο/η μου για να τους μιλήσω

    Ναι

    Όχι

51. Όταν ο δάσκαλος / η δασκάλα εξηγεί το μάθημα στην τάξη, τα χέρια μου δεν μπορούν να ηρεμήσουν, και παίζω συχνά με μολύβια ή αντικείμενα που είναι κοντά μου

    Ναι

    Όχι

52. Δεν τα καταφέρνω πολύ καλά στο να δημιουργώ ή να διορθώνω πράγματα

    Ναι

    Όχι

53. Μαθαίνω πιο γρήγορα το μάθημα όταν περπατάω ή κουνάω τα χέρια μου και τα πόδια μου

    Ναι

    Όχι

54. Όταν προσπαθώ να μάθω κάτι από έξω, κάθομαι ήσυχα

    Ναι

    Όχι (Maryani et al., 2017)

Appendix D

On-line Survey

The purpose of this research is to investigate if there are any differences in homework challenges between students with a preferred learning style (visual, auditory, and kinesthetic). The visual learning style has a preference in written instructions, the auditory to oral instructions, and the kinesthetic prefers to act on what they learn.

The survey consists of two sections. The first section will be answered by you and includes questions about the way your child deals with homework. At the beginning of this section there are demographic questions that will be used for statistical purposes. The second section will be answered by your child and consists of questions regarding their preferred learning style (visual, auditory, kinesthetic). Each section will take 10-15 minutes to complete.

All responses are anonymous. The collected data are password protected and only the principal investigator, Poimenidi Dimitra and her supervisor, Dr. Alessandra Sax will have access to them.

Your child's and your participation are completely voluntary, and you may quit at any time without penalty. In the case of participation withdrawal, all information obtained will be permanently deleted from all records.

If you have questions or concerns about this research at any time, please contact: Poimenidi Dimitra, Phone: 6932831233; Email: D.Pimenidi@acg.edu. You may also contact the faculty member supervising this work: Dr. Alessandra Sax EdD, LMSW, Associate Professor, Part-time Psychology Faculty, 6 Gravias Street, 15342, Athens, Phone. 210 600 9800, (ext. 1517), e-mail: ASax@acg.edu.

This research study has been reviewed and approved by the Institutional Review Board of The American College of Greece.

Thank you very much for your time!

By selecting "I Agree" you give your consent for your child's and your participation in the survey.

I Agree

1st Section – To be completed by the parent.

1. Please select: Are you the

   Mother

   Father

2. Please state your family structure (e.g., married, single parents, children from previous marriages)
3. Please select your age

   25-34

   35-44

   45-54

   55-64

   65+

4. Please state how much time you need every day to help your child to complete their homework.
5. What is your educational status? Please select one of the following:

   High school graduate

   Undergraduate studies

   Graduate studies

Other, please state

6. Are you employed?

   Yes

   No

7. What is your employment status?

   Full time

   Part time

8. Do you work from home?

   Yes, please state the number of days

   No

9. Please state how old is your child.

10. What grade are they in?

    4^{th}

    5^{th}

11. What is your child's gender?

    Male

    Female

12. Are there any learning difficulties?

    Yes, please state

    No

13. Are there any siblings?

    Yes

    No

Please answer the following questions if applicable:

14. Please state how old are the siblings?
15. What grade are they in?
16. How old is your spouse?

    25-34

    35-44

    45-54

    55-64

    65+

17. What is your spouse's educational status?

    High school graduate

    Undergraduate studies

    Graduate studies

    Other, please state

18. Is your spouse employed?

    Yes

    No

19. What is your spouse’s employment status?

    Full time

    Part time

20. Does your spouse work from home?

    Yes, please state the number of days

    No

The following questions describe the frequency of homework challenges. Please select the best suitable answer.

21. Fails to bring home assignment and necessary materials.

    Never

    Sometimes

    Often

    Very often

22. Doesn’t know exactly what homework has been assigned.

    Never

    Sometimes

    Often

    Very often

23. Denies having homework assignment.

    Never

    Sometimes

    Often

    Very often

24. Refuses to do homework assignment.

    Never

    Sometimes

    Often

    Very often

25. Whines or complains about homework.

    Never

    Sometimes

    Often

Very often

26. Must be reminded to sit down and start homework.

    Never

    Sometimes

    Often

    Very often

27. Procrastinates, puts off doing homework. [waits until last minute]

    Never

    Sometimes

    Often

    Very often

28. Does not do homework unless someone is in the room.

    Never

    Sometimes

    Often

    Very often

29. Does not do homework satisfactorily unless someone is in the room. [Doesn't do homework unless someone does it with him/her]

    Never

    Sometimes

    Often

    Very often

30. Daydreams or plays with objects during homework.

    Never

Sometimes

Often

Very often

31. Easily distracted by noises or activities of others.

Never

Sometimes

Often

Very often

32. Easily frustrated by homework assignment.

Never

Sometimes

Often

Very often

33. Fails to complete homework.

Never

Sometimes

Often

Very often

34. Takes unusually long time to do homework.

Never

Sometimes

Often

Very often

35. Responds poorly when told by parent to correct homework.

Never

Sometimes

Often

Very often

36. Produces messy or sloppy homework.

Never

Sometimes

Often

Very often

37. Hurries through homework and makes careless mistakes.

Never

Sometimes

Often

Very often

38. Shows dissatisfied with work, even when he/she does a good job.

Never

Sometimes

Often

Very often

39. Forgets to bring assignment back to class.

Never

Sometimes

Often

Very often

40. Deliberately fails to bring assignment back to class.

    Never

    Sometimes

    Often

    Very often (Anesko et al., 1987)

2nd Section – To be completed by the child. Please select the answer that suits you most.

My name is Dimitra Poimenidi and with this survey I will try to assess your preferred learning style (visual, auditory, and kinesthetic). The visual learning style has a preference in written instructions, the auditory to oral instructions, and the kinesthetic prefers to act on what they learn.

The survey consists of two sections. The first section has already been answered by your parent and has given their consent for your participation. The questions were about the way you deal with homework. You will need 10-15 minutes to complete your questions. With this survey we will try to find if there are any differences in homework challenges between students with a preferred learning style

All responses are anonymous and accessible only to me and my supervisor, Dr. Alessandra Sax. Your participation is completely voluntary, and you may quit at any time without penalty. If you quit**,** all your answers will be permanently deleted.

If you have questions or concerns about this research at any time, you may call me: Poimenidi Dimitra, Phone: 6932831233; or send me an e-mail: D.Pimenidi@acg.edu. You may also contact my supervisor: Dr. Alessandra Sax, Phone. 210 600 9800, (ext. 1517), e-mail: ASax@acg.edu.

By selecting “I Agree” you give your consent for your participation in the survey. If you do not wish to participate just close the browser.

I Agree

1. I take notes in my notebook neatly and regularly.

   Yes

   No

2. I rarely take notes of the messages the teacher verbally tells me.

   Yes

   No

3. After I finish the test, I check the answer carefully.

   Yes

   No

4. I prefer to hear the teacher explain the lesson in front of the class instead of reading the textbook.

   Yes

   No

5. I'm more interested in seeing sculptures, paintings, pictures than listening to music.

   Yes

   No

6. When there is an important explanation from my teacher, I chat with a friend, so I do not have time to take notes.

   Yes

   No

7. I can still concentrate on reading books despite my noisy friends in class.

   Yes

   No

8. I am not interested in seeing sculptures, paintings, drawings; I am more interested in music.

   Yes

   No

9. I forget what the teacher said if I did not take notes on it.

   Yes

   No

10. I immediately submit a test answer sheet to the teacher once I finish the test.

    Yes

    No

11. I answer other people's questions with short and necessary answers.

    Yes

    No

12. I am less active in answering questions given by the teacher.

    Yes

    No

13. I answered the teacher's question quickly.

    Yes

    No

14. I find it hard to concentrate on reading a book when the class atmosphere is noisy.

Yes

No

15. I find it difficult to remember verbal questions from teachers.

Yes

No

16. I find it easier to understand the question in writing.

Yes

No

17. I prefer to see pictures in books rather than listening to the teacher’s explanations.

Yes

No

18. I give answers to other people's questions in complete.

Yes

No

19. I find it easier to remember lessons if I speak to myself while studying.

Yes

No

20. I often spent the break time reading rather than joking with friends

Yes

No

21. I easily repeat the subject matter when listening to music and songs.

Yes

No

22. I find it hard to remember lessons while talking.

    Yes

    No

23. When expressing an opinion or answering a question, I used to speak quickly and clearly.

    Yes

    No

24. I am not fluent to sing back the song/music that has been taught by the teacher.

    Yes

    No

25. In the interlude between lessons, I prefer to joke with friends.

    Yes

    No

26. I prefer taking notes than talking during group discussions.

    Yes

    No

27. I murmur as I read the book.

    Yes

    No

28. I prefer to convey my story ideas in writing, rather than spoken.

    Yes

    No

29. I find it difficult to understand the subject matter when displayed in drawings, concept maps, or graphs.

    Yes

    No

30. I read the book quietly.

    Yes

    No

31. While working on group assignments, I actively shared my opinions.

    Yes

    No

32. I speak in front of the class with fluency.

    Yes

    No

33. When searching for information about something, I prefer it to be read out by other people rather than read it myself.

    Yes

    No

34. I easily understand material in the form of images, graphics, or concept maps.

    Yes

    No

35. I like to tell stories, but it's hard to get my story idea in writing.

    Yes

    No

36. When looking for information about something, I prefer to read it myself rather than it to be read out by other people.

    Yes

    No

37. When talking to friends or teachers, I have to be near them.

    Yes

    No

38. My handwriting is neat and easy to read.

    Yes

    No

39. To make it easier for me to read, I used my finger to point to the word I read.

    Yes

    No

40. When I want to ask or talk to other people, I do not need to touch the person first.

    Yes

    No

41. I am excited when I come to make or fix something with my hands.

    Yes

    No

42. As I listen to the teacher's explanation, I am calm.

    Yes

    No

43. I learn well when I can touch the object being studied.

Yes

No

44. I find it hard to remember the subject matter being practiced.

Yes

No

45. I find it easier to understand the subject matter when practiced directly.

Yes

No

46. While reading, I do not use my index finger to point to the word I read.

Yes

No

47. When I want to ask or talk to others, I need to touch the person first.

Yes

No

48. To be able to learn well, I do not need to touch objects being studied.

Yes

No

49. My handwriting is not neat.

Yes

No

50. I do not have to stand near a teacher or friend while talking to them.

Yes

No

51. When the teacher explained the material in front of the class, my hands could not calm down, often playing pencils or objects near me.

    Yes

    No

52. I'm not much help in making or fixing things.

    Yes

    No

53. I memorized the subject matter while walking or moving my arms and legs.

    Yes

    No

54. When I memorize, I usually sit quietly.

    Yes

    No (Maryani et al., 2017)