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CONTENTS

CHAPTER 1

ORAL COMMUNICATION STRATEGY USE IN ENGLISH LANGUAGE LEARNING

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Introduction

The dynamic field of language learning and teaching has been taking many steps forward in accordance with the pivotal advancements in technology and economical and political situations in the world. Theories, strategies and practices of language teaching and learning in the recent decades are subject to change in a way to focus more on the communicative, functional and individual aspect of language.

These novelties have their roots in Communicative Approach (Communicative Language Teaching). As communicative language teaching (CLT) suggests, in communicative activities there is supposed to be a desire to communicate, a communicative purpose, no teacher intervention, and no materials control. The level of teacher intervention is kept at a minimum level during communicative activities; however, the teacher is to promote the use of communicative language by giving immediate answers to the students in the relatively uncontrolled conversations (Harmer, 2001).

As observed, various theories and practices in the classroom have evolved in recent decades, often supporting each other to some degree. One of the key concepts that has emerged is the use of oral communication strategies, which has sparked considerable debate among scholars due to their complexity in both definition and application. The challenge lies in the difficulty of changing established habits. Both teachers and learners struggle to redefine their roles within the classroom context. Given that much of language learning occurs outside formal education, students are often unaccustomed to taking charge of their own communication strategies. This creates a significant challenge: How aware are students of the role of oral communication strategies and how they use them when speaking English? This question highlights a crucial area for further exploration in language learning.

Definitions of Language Learning Strategies (LLS)

Language Learning Strategies concept was defined and described in various ways by various researchers (Cohen et al., 2023; Lestari & Wahyudin, 2020). There has always been a debate concerning the definition of LLS which has resulted in a great number of perspectives on the definition of the concept. Huang (2004) provided us various earlier definitions for language learning strategies (cited in Atik, 2006, pp. 15-16) as is listed in Table 1 below.

Table 1. *Earlier Definitions of Language Learning Strategies*

Researcher(s)	Definition of LLS
Bialystok (1978)	"optimal means for exploring available information to improve competence in a second language" (p. 71).
Stern (1983)	"… strategy is … for general tendencies or overall characteristics of the approach employed by the language learner, leaving techniques as …. Particular forms of observable learning behaviour" (Ellis, 1994, p. 531).
Tarone (1983)	"an attempt to develop linguistic and sociolinguistic competence in the target language – to incorporate these into one's interlanguage competence" (p. 67).
Seliger (1984)	Strategies – "basic abstract categories of processing by which information perceived in the outside world is organized and categorized into cognitive structures as part of a conceptual network" (p. 4). Tactics – " variable and idiosyncratic learning activities, which learners use to organize a learning situation, respond to the learning environment, or cope with input and output demands" (Ellis, 1994, p. 532).

Weinstein & Mayer (1986)	"behaviours and thoughts that a learner engages in during learning" which are "intended to influence the learner's encoding process" (p. 315).
Mayer (1988)	"behaviours of a learner that are intended to influence how the learner processes information" (p. 11).
Chamot (1987)	"techniques, approaches, or deliberate actions that students take in order to facilitate the learning and recall of both linguistic and content area information" (p. 71).
Rubin (1987)	"strategies which contribute to the development of the language system which the learner constructs and affects learning directly" (p. 22).
Wenden & Rubin (1987)	"… any sets of operations, steps, plans, routines used by the learner to facilitate the obtaining, storage, retrieval, and use of information" (p. 19).
Oxford (1989)	"behaviours or actions which learners use to make language learning more successful, self-directed and enjoyable" (p. 235).
Oxford (1992/1993)	"specific actions, behaviours, steps, or techniques that students (often intentionally) use to improve their progress in developing L2 skills. These strategies can facilitate internalization, storage, retrieval, or use of the new language. Strategies are tools for the self-directed involvement necessary for developing communicative ability" (p. 18).

Oxford (1990)	"specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations" (p. 8).
O'Malley & Chamot (1990)	"the special thoughts or behaviours that individuals use to help them comprehend, learn, or retain new information" (p. 1).
Carrell, et al. (1989)	"the kinds of cognitive, metacognitive, social, and affective strategies that learners employ" (p. 3).
Richards & Platt (1992)	"intentional behavior or thoughts used by learners during learning so as to better help them understand, learn, or remember new information" (p. 209).
Stern (1992)	"broadly conceived intentional directions and learning techniques" (p. 261).
Green & Oxford (1995)"	"specific actions or techniques that (learners) use, often intentionally, to improve their progress in developing L2 skills" (p. 262).
Weaver & Cohen (1997)	"specific behaviours, steps and actions taken to enhance one's own learning, through the storage, retention, and use of new information about the target language. They are conscious thoughts and behaviours used by the learners with the explicit goals of improving their knowledge and understanding of a target language" (p. vi).
Cohen (2002)	"learners' conscious and semi-conscious thoughts and behaviours, having the explicit goal of improving the learner's knowledge and understanding of the second language (i.e. language learning strategies), as well as strategies for using the language that has been learned or for getting around gaps in language proficiency (i.e., language use strategies)" (p. 51)

Source: Atik, 2006, pp. 15-16

Foreign Language Learning and/or Use Strategies

Language learning and/or use strategies consist of the steps and actions chosen by the learners to take one step further in learning the foreign language (Cohen et al., 2003; Cohen et al., 2023).

In order to facilitate the tasks provided by the instructor the students use several strategies which would personalize the learning process. These language learning strategies have been categorized into four main types (Cohen et al., 1996):

1- Cognitive strategies usually involve the identification, retention, storage, retrieval of words, phrases, and other elements of the target language (e.g. using prior knowledge to comprehend new language material, applying grammar rule to a new context, or classifying vocabulary according to topic).

2. Metacognitive strategies deal with pre-planning and self-assessment, online planning, monitoring and evaluation, as well as post evaluation of language learning activities. (e.g. previewing the language materials for the day's lesson, organizing one' thoughts before speaking, or reflecting on one's performance)

3. Social strategies include the action that learners select for interacting with other learner, a teacher, or with native speakers (e.g. asking questions for clarification, helping a fellow student complete a task, or cooperating with others)

4. Affective strategies serve to regulate learner motivation, emotions, and attitude (e.g. strategies for reducing anxiety, for self-encouragement and for self-reward). (p. 4)

As for language use strategies, they consist of language performance and communication strategies. Performance strategies are strategies for rehearsing target language structures through form-focused practice for instance. As opposed to performance strategies, in

case of communication strategies, the spotlight is on communicating the message in the target language despite gaps in target language knowledge. As opposed to performance strategies, communication strategies are used to communicate an idea (Cohen et al., 1996, p. 4).

Recent research emphasizes the use of strategies in language learning as a crucial component in effective language learning. Particularly noteworthy is the use of metacognitive strategy use since its use has proven especially valuable. The findings suggest that explicit instruction in metacognitive strategy use could significantly enhance EFL learning outcomes (Lestari & Wahyudin, 2020).

Communication Strategies

Selinker (1972) was the first to introduce the notion of communication strategy (p. 229) although not in detail. Dörnyei (1995) summarizes the historical development of the term communication strategies as follows:

In the 1970s, four studies prepared the ground for the study of communication strategies (CSs), a new area of research within applied linguistics: Selinker's (1972) classic article on interlanguage introduced the notion of strategies of L2 communication. Varadi (1973, but published in 1980) and Tarone (1977; also Tarone, Cohen, & Dumas, 1976) elaborated on Selinker's notion by providing a systematic analysis of CS introducing many of the categories and terms used in subsequent CS research. Savignon (1972) reported on a pioneering language teaching experiment involving a communicative approach, which, for the first time, included student training in CSs (or, as she termed them, *coping strategies*). Since these early studies, much research has been done to identify and classify CSs (for reviews, see Bialystok, 1990; Cook, 1993; Poulisse, 1987); however, far le attention has been paid to the question of whether these strategies could be integrated […]. (p. 55)

As is summarized, there has not been a consensus on the definition of the term communication strategy, but a variety of definitions were proposed. However, it is a fact that non-native and native speakers of a given language may struggle to find the right expression or grammatical construction when attempting to communicate their message from time to time (Faucette, 2001).

Faucette describes communication strategy as "the ways in which an individual speaker manages to compensate for this gap between what she wishes to communicate and her immediately available linguistic resources are known as communication strategies (CS)" (2001, p. 2) by also adding that "[a]lthough researchers are still not in complete agreement, one widely accepted definition is that "communication strategies are potentially conscious plans for solving what to an individual presents itself as a problem in reaching a particular communicative goal" (Færch & Kasper, 1983a, p. 36, as cited in Faucette, 2001). In addition to these definitions the following definitions were also proposed various researchers which were compiled by Rababah (2002):

- conscious communication strategies are used by an individual to overcome the crisis which occurs when language structures are inadequate to convey the individual's thought (Tarone, 1977, p. 195).

- they are systematic techniques employed by a speaker to express his meaning when faced with some difficulty (Corder, 1981, 1983, pp. 103-16).

- communication strategies are potentially conscious plans for solving what to an individual presents itself as a problem in reaching a particular communicative goal (Faerch & Kasper, 1983a, p. 36).

- communication strategies predetermine the verbal planning, they serve the function of adjusting the plan to the situation, i.e. each individual utterance is to be seen as strategic. What is specific for IL users is that plans of action cannot be directly converted into verbal

plans, because of gaps in the speaker's (and hearer's) linguistic repertoire. The primary function of function of communication strategies in the speech of IL users is to compensate for this deficit (Wagner, 1983, p. 167).

- communication strategies, i.e., techniques of coping with difficulties in communicating in an imperfectly known second language (Stern, 1983, p. 1983).

- [….] all attempts to manipulate a limited linguistic system in order to promote communication. Should learning result from the exercise, the strategy has also functioned as a learning strategy, but there is no inherent feature of the strategy itself which can determine which of these roles it will serve (Bialystok, 1983, pp. 102-103).

- compensatory strategies are strategies which a language user employs in order to achieve his intended meaning on becoming aware of problems arising during the planning phase of an utterance due to his own linguistic shortcomings (Poulisse, 1990, p. 88).

- communication strategies (CS) have generally been defined as means that speakers use to solve their communicative problems; (Paribakht, 1985, p. 132).

- the means used by a speaker to overcome a difficulty encountered whilst attempting to communicate in the foreign language (Towell, 1987, p. 97).

- the conscious employment by verbal or non-verbal mechanisms for communicating an idea when precise linguistic forms are for some reasons not available to the learner at that point in communication (Brown, 1987, p.180).

After Rababah (2001) cites these definitions, it is also stated in the article that "the key defining criteria for [communication strategies] are "problemacity" and "consciousness." All the previously mentioned definitions support the claim that CSs are employed when L2 learners encounter a problem in communication. These "problems" and "difficulties" are diverse. The speakers may not communicate the message due to lack of second or foreign language linguistic knowledge which would lead the speaker to apply different strategies to compensate for it. Another problem might be that the speech may not be clear and intelligible enough.

At this point, the speakers must make themselves understood, which requires the use of alternate strategies while speaking. These and similar problems lead speakers to use various ways to express themselves while establishing communication. These strategies may vary when they are evaluated under the name of communication strategies. For instance, Tarone (1977) suggests using some strategies such as paraphrasing, conscious transfer, avoidance while Dörnyei and Scott (1997) suggests strategies such as message abandonment, message reduction, message replacement, circumlocution, use of all-purpose words, word-coinage, restructuring, literal translation, code switching, use of similar sounding words, mumbling, and omission. Additionally, strategies such as self-rephrasing, self-repair, the use of fillers, and repetition are recommended for use during speaking.

With regard to the necessity of these strategies, Bialystok (1990) provides several definitions of communication strategies, stating that they are employed when the speaker encounters a "difficulty" Corder, 1977, as cited in Bialystok, 1990, p. 3) or "a problem" (Faerch & Kasper, 1983a, as cited in Bialystok, 1990, p. 3) in communication.

As communication strategies are claimed to be used to cope with these problems or difficulties in question, it can be claimed that studies conducted in the area also investigate the applicability of any kind of strategy to cope with problems of speaking in a foreign or second language. Several studies were conducted to establish a direct

association between apparent use of learner strategies and second language proficiency (O'Malley & Chamot, 1990; Oxford, 1996). Oxford (1996) claims that students with advanced language proficiency have reported higher levels of overall strategy use and frequent use of a greater number of categories of strategies.

Another similar study was conducted by Zhang (2007) with an aim to investigate the reasons and solutions concerning the inefficiency of the students' while they communicate in English. The study was conducted at a Chinese Secondary Vocational School. Zhang (2007) describes the student profile as follows: "most students have no intention of communicating in English, nor do they feel the need to do so. Even though English is a key course for students in Hotel Management and Tour Guiding, teachers can seldom find them speaking in English on campus or even in classrooms. The reason for this may contribute to their limited acquisition of the language and their limited interest in it. […] A large majority of students have no idea about how to cope themselves when they are confronted with some words they do not know" (p. 44). With an aim to investigate the problems those EFL learners face, Zhang (2007) concludes that EFL teachers teach learners communication strategies to make English language learning more meaningful and influential. In addition to that, an English-speaking environment needs to be created because by continual exposure to natural conversation students may learn through opportunities both by hearing more of the target language and by producing new utterances to test their knowledge (Wenden & Rubin, 1987, p. 26, as cited in Zhang, 2007).

With regard to autonomy and use of strategies, Simmons (1996) started conducting a study in 1991 via Independent Language Program as a part of the government-funded Adult Migrant English Program. There were 18 participants, and they expressed their willingness to work independently. During the first week it was found that most of the participants were unsuccessful in negotiating their own signed learning contract, in an effective way. Instead, they wanted the teacher to direct them to apply for the contract and handle their

studies. It was a longitudinal study where diaries as well as questionnaires were conducted in order to find out the corresponding learning activities in relation to strategies used. Following the training sessions, an increase in the use of strategies was recorded. At the end of the study, it was concluded that the aim of the study, which was whether strategy training would help the students to be more independent owners of their own learning process and their programs, was achieved in that the students proved to manage their learning by applying the strategies that suited them the best.

A more specific and relevant study conducted in the area belongs to Voller and Pickard (1996). The study was conducted at the University of Hong Kong following the decision to set up a self-access center. The students were encouraged to register for the conversation exchange program in which the students came from nearly eight different language background. They would meet several times a week to speak English. However, an important point here is that the partners could not speak the native language of the other partner. This ensures that English would be only medium for communication. Another point deserving attention is that the students were just directed at the initial stage of helping them to meet. They were given a conversation exchange form to create a record of all students' profile, and the consultation desk found a partner in accordance with the priorities and the profile of the students. To put it differently, apart from helping the students to find the best partner to practice, self-access center leaves each other detail of meetings and practice hours at the students' own discretion. At this very point, the difference between autonomous learners and others became more obvious. The researcher concludes that the conversion exchange program had been successful in proving that "autonomous learning is possible and is already being practiced by some" (p.126). The study demonstrates that learner autonomy and speaking skills have a mutual development sequence. When one develops the other one shows a similar development, as well.

Language learning strategies and use issues are not easy to handle with a few headings. There are many aspects of the concept; however, in the present study, learner autonomy and strategies for coping with speaking problems are handled to melt in the same pot. Therefore, the researcher only dealt with the related points by establishing dynamic relevance.

The learners who are aware of the best ways they can learn would most probably be more autonomous, which would lead to students who are more successful and aware of their own learning process. Faucette (2001) summarizes the relationship between communication strategy instruction and learner autonomy as follows "The connection between a learner autonomy approach and communication strategy instruction should be clear." Using the common metaphor of 'bridge', Færch and Kasper (1983a) argue that "by learning how to use communication strategies appropriately, learners will be more able to bridge the gap between pedagogic and non-pedagogic communicative situations" (p. 56, as cited in Faucette, 2001) by also adding that "learner autonomy can be thought of as the ability to bridge that gap, instruction can be thought of as the means to develop that ability." As is highlighted, communication strategies and learner autonomy are interrelated, so acquiring our students with communication strategies would promote learner autonomy in students. Faucette (2001) supports this view by summarizing the issue in the best way:

If one of the goals of language teaching is to produce independent, skillful L2 strategy users, and if we think it is important for our learners to be able to participate in real communication outside the classroom, then how can we ignore communication strategies in our L2 lessons? Perhaps learner autonomy is one of the most significant goals of communication strategy training. The two approaches go hand in hand and would help teachers develop independent, strategically competent language learners. (p. 10)

As is summed up briefly, teaching coping strategies in establishing communication in a foreign language would be of great benefit for the students. By employing strategies such as self-rephrasing, self-repair, fillers, and repetition, learners can overcome challenges they face during speaking. These strategies not only help maintain communication flow but also foster learner autonomy and confidence in real-world interactions. Understanding and applying these strategies can significantly enhance learners' speaking abilities, making them more adaptable and effective in diverse communicative situations. Ultimately, integrating communication strategies into language learning enables students to navigate the complexities of language use with greater ease and proficiency.

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CHAPTER 2

UTILIZATION OF TEACHING METHODS IN CLASSROOM MANAGEMENT IN PRIMARY SCHOOL[1]

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INTRODUCTION

The fact that there are great individual differences among the students in the classrooms, but that it is now considered a necessity that education should appeal to every individual, has led to the necessity that the teaching methods to be used in the lessons should also be diverse and inclusive. For this reason, all countries are trying to design their education systems in line with their educational goals and are taking all necessary measures for a better and successful education.

One of the pillars of a successful education is effective classroom management. Without working with a rational-scientific-accurate method in line with educational goals in classroom management, the educational goal cannot be expected to be realized. There are many factors affecting success in classroom management. One of the most important of these factors is undoubtedly the teaching methods used in lessons.

One of the most important factors affecting classroom management is teaching activities. A planned and correctly implemented teaching process will positively affect the learning of the whole class. Teaching methods that will keep students active in the teaching process should be chosen. Otherwise, classroom discipline may be disrupted and learning will not take place. For example, in a classroom where the lecture method is generally used and students are not given enough say, students may become disinterested in the lesson and the teacher may have difficulty in classroom management.

Teachers' practices, experiences and perspectives on this issue are important for classroom management. Considering the importance of asking questions and knowing, the effect of teaching methods on classroom management should be known by teachers. Teachers' understanding of classroom management is important for both teaching and classroom management.

In order to be successful in classroom management, it can be said that the correct selection and application of teaching methods is very important, methods will increase the quality of teaching and positively affect the quality

of classroom management. There are many teaching techniques that can be used in classroom management. Some of these techniques are as follows:

1. Aquarium Technique
2. Card Showing Technique
3. Circle Discussion Technique
4. Rotating Circle (Bearing) Technique
5. Talking Hat Technique
6. Dull Image (Sculpture) Technique
7. Mind Games
8. Hot Chair Technique
9. Know-Want-Learn Technique
10. Dictation Technique
11. Technique of Saying the Unsaid
12. 5N1K Technique
13. Newspaper Preparation Technique
14. Speaking Ring Technique
15. Micro Teaching Technique

Aquarium Technique

Aquarium is a teaching technique in which students are arranged in a big circle and those who want to speak come to the center of the circle and discuss. In this technique, only the students who come to the center of the circle can speak. The others can only watch the discussion or they can also enter the circle and participate in the discussion (Sönmez, 2008). Students in the big circle cannot intervene in the discussion in any way. Two, three or four students can come to the center of the circle and talk to each other, or only one student can come, express his/her opinion and return to his/her place in the circle.

In the fishbowl technique, only those inside the circle can speak, while the others can watch silently, which will mean a successful application in terms of classroom management. The fact that those in the big circle are not involved in the conversations requires them to remain silent. This prevents talking without asking for a word, which is an undesirable behavior in the classroom.

Such a practice in the lesson will prevent unwanted conversations in the classroom, as it will mean that not everyone can intervene, that is, only those inside the circle can speak. The rule that you can only come into the circle and speak will also help students to understand that they should not speak without taking the floor in later lessons.

Card Showing Technique

The card showing technique is a technique in which students show their opinions about a text read or explained by the teacher in the lesson by means of colored cards. According to Açıkgöz (2009), in the card showing technique, the teacher gives the students the colored cards prepared before the lesson and explains the meaning of these cards to them. As the sentences related to the lesson topic are read, students show their opinions about the sentences they hear with cards.

Cards prepared for different purposes (Taşkaya, 2021: 356)

Card showing technique can be utilized in many lessons for different purposes. Card showing, which is a teaching technique, enables students to express their opinions without speaking in classroom management. In this way, the noise that will occur during asking for the floor in the classroom will be prevented. When applying this technique, all students will have to listen carefully to the teacher in order to raise the correct card. When students'

attention is on the text being read, undesirable behaviors in the classroom will decrease.

Circle Discussion Technique

Circle discussion is a discussion technique in which people standing side by side in a circle take turns in expressing their opinions on the topic at hand. In addition to discussion, this technique can be used to develop students' speaking, listening and thinking skills. In this technique, those in the circle take turns to express their opinions on the subject of discussion. It is a teaching technique that can be applied at every grade level. When the class is too crowded or if the physical conditions of the classroom do not allow for forming a circle, the application can be done in the garden.

The circle technique allows each student in the class to actively participate in the discussion at least once to express his/her opinion. Students in the circle will have to listen to what is said before them in order to participate in the discussion. This will result in a less noisy classroom environment.

Rotating Circle (Bearing) Technique

The spinning circle is a teaching technique used to ensure the active participation of every student in the class. The rotating circle technique is also called a bearing. In this technique, students forming two concentric circles look at each other. Each student talks to the other student. One of the circles is fixed and one is moving. All students discuss the topic given to them with the other student. The students in the moving circle match with the student next to them on the command given by the teacher. Thus, the student who moves to the side at each command will discuss the topic discussed in pairs with everyone in the opposite circle (Açıkgöz, 2009).

The circle technique allows all students to express their thoughts and encourages them to listen to and respect each other. It can be used especially in lessons that require discussion and exchange of ideas. Before the application, students are warned that they should only speak in a whisper so that the other person can hear them. Thus, when it is necessary to speak in similar activities in the lesson, students will be taught to speak without making noise or shouting thanks to the spinning circle.

Talking Hat Technique

It is a teaching technique in which only the student wearing a hat can speak during the lesson. In this technique, at the beginning of the lesson, the students are told that as a rule, the one with the hat on his/her head can speak. In the meantime, the other students only listen to the person speaking. They cannot ask questions or ask for the floor. In order to get the desired efficiency from the application, the teacher should choose the person who will speak.

"The teacher puts the hat on the student he/she wants to speak while searching for an answer to a question or taking the opinions of the students on the subject being taught, and takes the hat off the student's head when the student finishes speaking. This technique can also be used for effective classroom management as it prevents students from speaking without taking the floor" (Taşkaya, 2021: 405).

Dull Image (Sculpture) Technique

In the frozen image technique, which is one of the drama techniques, students create a scene given to them in a motionless way. In other words, with this technique, a moment of the play is photographed. The technique also allows a concrete subject to be presented concretely to the audience (Adıgüzel, 2017). This technique can also be used to bring a new perspective to events.

When it is observed that unwanted conversations increase or motivation decreases in the classroom, the attention of the whole class can be drawn to the subject by telling the students that the frozen image technique will be applied. In this way, the disrupted classroom order can be quickly brought back under control.

A command is given to one or a group of students to do something on a given topic, and then the students carry out the task according to this command as if they were posing for a photograph. In the meantime, a person (usually the teacher) takes a photograph of these students. This technique will provide the teacher with great convenience in classroom management. The

frozen image can also be used in psychomotor activities such as physical education to see how students perform movement.

Mind Games

It is seen that the interest in mind games in the field of education is gradually increasing. Especially at the primary school level, mind games have started to be used more frequently in lessons. The fact that they support children mentally, physically and emotionally encourages teachers to play these games in their classes. Mind games also contribute greatly to making lessons fun and help students gain the ability to focus their attention on a subject. Mind games also teach students to be patient, tolerant, empathetic and humble.

There are many different types of mind games. Some of these games are also used in education, teaching or leisure time activities. Some of the mind games used for educational purposes in schools are as follows:

1. Anagram
2. Apartment
3. Resourceful Structures
4. Checkers

5. Rectangles
6. Wall
7. Missing letters
8. Equilibrio
9. Lanterns
10. Groups
11. Process table
12. Corridor
13. Kulami
14. Sphere game
15. Meta Forms
16. Mangala
17. Pentago
18. Pyramid
19. Qbitz
20. Colorful frames
21. Reversi
22. Chess
23. Number puzzle
24. Word type
25. Sudoku

A quiet environment is needed for this game where thinking and strategizing is a necessity. In a classroom where mind and intelligence games are played, it will be easier for students to pay attention to the subject. Visible improvements were found in the classes that played mind and intelligence games in making students listen to the lesson without making noise. Students will learn to focus on the lesson more easily during the games and will continue to do so in the following lessons.

Hot Chair Technique

In drama, it is a drama technique in which a group of students sitting in a U-arrangement ask questions to a student sitting at the open end and the seated person responds to these questions with the mouth of the character he/she is playing (Adıgüzel, 2017). The character sitting in the hot chair will be fully understood with the help of questions. Since there is an application in the form of question-answer, it can be used in lessons even when drama is not practiced. "Since it includes activities such as problem solving and questioning, it contributes to the development of creativity and self-expression" (Kara, 2010: 101).

This technique improves students' ability to prepare questions appropriate to the text. Care should be taken to ensure that the questions do not force the character. In addition, the answers given by the character sitting in the chair should not be criticized (Adıgüzel, 2017). It is useful for the teacher to explain this technique before applying it and to explain the rules clearly to the students. It should not be forgotten that this application is a technique used in a psychodrama.

A student who volunteers to sit in the hot chair is selected in the class. This student answers questions as one of the characters in the text being read. The other students are asked to direct questions to their friends sitting in the hot chair as if the character in the text was sitting opposite them. It is emphasized that the questions are directed to the character, not to the student. The students who wish to do so direct their questions to the character in a mutual and non-consecutive manner. The practice continues until the questions are finished.

Know-Want-Learn Technique

Developed by Donna M. Ogle from the USA, Know-Want-Learn is a technique for reading comprehension. The aim of this technique is to ensure full comprehension of the text read. The other name of the Know-Want-Learn

technique is KWL. The Turkish meanings of the letters in KWL, which is an acronym produced from the initials of some words in English, are as follows:

Know: What do I know?

Want: What do I want to learn?

Learned: What have I learned?

Know-Want-Learn cards (Taşkaya, 2021: 356)

In this technique, at the beginning of the lesson, students write what they know about the topic in the relevant box. Then they write what they want to know about the topic. At the end of the lesson, they write what they have learned. Thanks to the Know-Want-Learn technique, students will actively participate in the subject from the beginning of the lesson.

Students who do not listen attentively during the lesson will have difficulty in filling in the Tick-to-Learn cards distributed to them at the beginning of the lesson. Since this situation requires students to focus only on the subject during the lesson, undesirable student behaviors will be prevented. For this reason, the Know-Want-Learn technique can be used as a teaching technique to help classroom management.

Dictation Technique

Dictation is one of the frequently used techniques in writing instruction. "Dictation is the process of writing down what is read to them at regular intervals in the most accurate way possible. Dictation is one of the

most widely used techniques to improve writing skills" (Richards & Schmidt, 2002: 157). This technique improves both listening and writing skills of students.

In order to transcribe the text read by the teacher in the same way, students need to listen carefully. Therefore, a quiet environment will be created in the classroom. This technique will contribute to classroom management as unwanted student behaviors will decrease during dictation.

Saying the Unsaid Technique

At the end of the lesson, when students say a sentence that is related to the topic of the day, it is called the technique of saying the unsaid. It is a teaching technique that requires students to listen carefully to the lesson (Açıkgöz, 2009). The teacher states at the beginning of the lesson that this technique will be applied and asks all students to make an unspoken sentence at the end of the lesson.

The students' effort to say something new will both keep them interested in the lesson and improve their vocabulary. This technique will also ensure that students listen carefully to the lesson (Taşkaya, 2021). This technique also supports students' creative and critical thinking skills. It also creates an opportunity for students to express their thoughts freely.

When it is announced at the beginning of the lesson that this technique will be used, students listen carefully to the lesson. They need to understand the topic in order to make an unspoken but relevant sentence. This requires them to focus only on the lesson. This technique will reduce unwanted student behaviors in the lesson.

5N1K Technique

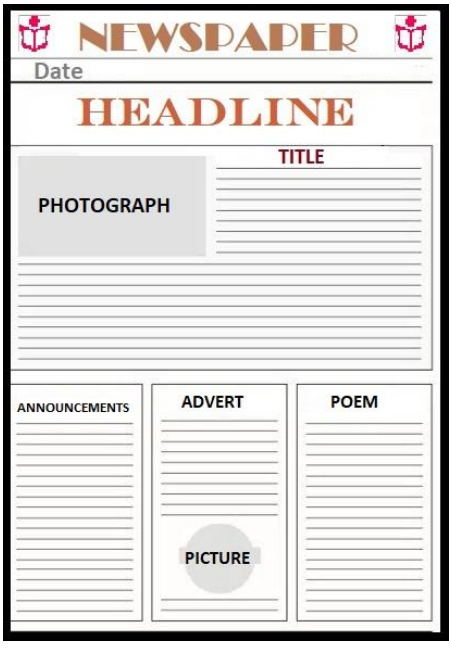
5N1K is a teaching technique that aims to reveal the answers to 6 basic questions for a full understanding of all situations related to an event. This technique is frequently used especially for writing news texts. In this technique, the answers to the questions "what, where, when, why and who"

are sought. According to Cohen (1983), these types of questions can be used especially for primary school students to understand short stories in depth.

During the implementation of this technique, the teacher asks the students to write down the questions related to the event before the end of the narration. The students write the answers to the questions on their papers and the teacher checks these answers at the end of the lesson. Correct answers require the student to pay attention to the subject.

Newspaper Preparation Technique

The newspaper technique is the preparation of a newspaper by the students about a topic covered in the lesson. In this technique, students prepare a newspaper page about the topic at the end of the lesson, either individually or in groups. The teacher distributes a blank newspaper template to the students at the beginning of the lesson and asks them to write what they have understood according to this template at the end of the lesson. Newspaper preparation can also be assigned as homework



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Students will need to listen carefully to the lesson in order to be able to prepare the newspaper at the end of the lesson. Since the newspaper will be the subject of the lesson, students will have to listen to the activities appropriate to the newspaper by taking notes. This will reduce unwanted student behaviors in the classroom. Because the newspaper technique makes students listen to the lesson more carefully.

The newspaper template can have many sections. The teacher can determine these sections according to the level of the class and the subject. Some of the sections that can be included in the newspaper are as follows:

- ✓ Image
- ✓ Poetry
- ✓ News text
- ✓ Announcement
- ✓ Photo
- ✓ Quote of the day
- ✓ Headline
- ✓ Cartoon
- ✓ Column
- ✓ Poem of the day
- ✓ Headline news
- ✓ Ad text
- ✓ Slogan

Speaking Ring Technique

Students arranged in a circle and taking turns to express their opinions on a topic is called the talking circle technique. "The talking circle enables students to understand and respect different opinions" (Sagnak, 2019: 224). This technique allows each student to speak at least once.

Since only the next person will speak in the speech circle, a quiet environment will be provided in the classroom. On the other hand, since

everyone will listen to the speaker, the subject will be learned in every aspect. During the speech, no one should interrupt the speaker and criticize what is said. Since it will be difficult to apply this technique in a crowded classroom, it can be done in a gym or garden.

Micro Teaching Technique

Micro-teaching is a teaching technique in which a skill is recorded by the student and then an evaluation is made based on this recording. Micro-teaching is one of the most utilized techniques especially in teacher training.

Micro-teaching technique can also be used outside the field of teacher training (Meral et al., 1998). How a job is done can be recorded and then the employees can watch what they do. Thus, the difficulties encountered in the work and where mistakes were made can be seen. Watching the recording afterwards is also useful for self-criticism.

Micro-teaching is important for students to see for themselves how they behave in lessons. The teacher records what the whole class is doing at a certain point in the lesson and then the whole class watches the recording again. Thus, all students see themselves in the recording. On a piece of paper, they write down the undesirable behaviors they notice. They then present to the teacher in writing or orally how they will fix it.

OUTCOME

The methods and techniques used by teachers to engage their students during lessons are important in many ways. Because the teaching methods used in lessons also facilitate classroom management by affecting students' motivation, interest in the lesson, active participation, social skills and empathy skills.

Students who are able to learn, do, skill and feel useful will be happy. Correctly selected teaching methods contribute to the student easily acquiring the desired skills. Methods and techniques in lessons also enable students to learn by having fun. Thus, a suitable classroom atmosphere will be created for learning in the lesson. Only in a classroom where students are active and different methods and techniques are used in a planned manner can we talk about successful classroom management.

The teaching method chosen affects many teaching activities such as student motivation, active participation in the lesson, the degree of interest in learning, the discipline of the class, the communication style in the classroom, whether they will like the lesson and the teacher, and their active participation in the lesson.

Teaching activities are one of the dimensions of classroom management. Because teaching activities to be carried out in the classroom also show how classroom management will work. Classroom management ensures the creation of a suitable environment for learning. The methods used in lessons make the class active and increase student participation. Therefore, the teaching methods and techniques to be selected will both increase academic success and change students' perspectives on education.

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IMAGES

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TRANSLATİON

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CHAPTER 3

PRESERVICE BIOLOGY TEACHERS' OPINIONS ON THE USE OF MOBILE PHONE IN LABORATORY COURSES

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Introduction

Creating environments in biology teaching where students love learning and understand the subject will positively affect students' attitudes towards the course and increase their motivation and success in the course (Gürbüzoğlu Yalmancı, 2016). In general, experiments, observations, excursions, etc. methods are frequently included in science courses in addition to theoretical explanation. Laboratory studies are a helpful tool in making sense of the scientific process (Uluçınar, Cansaran, & Karaca, 2004). When these practices are implemented correctly, they support the learning-teaching process. In addition, activities should be selected and planned in accordance with the changes made in the program, class level, current information, and the environment. The courses should also be tried to be made more efficient with the materials to be used in the course. With today's developing technology, the accessibility of course materials and tools, computer programs, web-2 tools, mobile applications, etc. have increased in variety.

Technology is the creation of new products by using existing tools or instruments in order to increase the quality of daily life (Gök & Erdoğan, 2010). Computers have made images in virtual environments or disks more accessible (Keskin, Özbek, Ulaş, & Müdok, 2015). Today, mobile phones (smart phones) are among the most used technological devices. With smartphones, it is possible to easily do tasks that could only be done with computers in the past (Şenel, 2016). Students can learn the use of technological resources not only as hardware but also as software, and the time needed to plan, develop, organize and evaluate multimedia (İşcan, 2005).

Mobile phone technology has been one of the important developments that facilitate communication and daily life. Although it was used only for communication purposes at first, the features of mobile phones have increased and diversified as developments have increased (Aydoğdu Karaaslan & Budak, 2012). Examples of these include camera quality, memory, current applications and screen size. Technological developments are also reflected in

the classroom environment and microscopes used in laboratories in schools. Mobile phones are useful technological tools for learning because they are portable, affordable, easily accessible and usable (Kafyulilo, 2012). The increasing prevalence of mobile devices such as smartphones on university campuses enables the development of new teaching strategies for higher education students (Gikas & Grant, 2013).

The microscope is an important tool that facilitates learning biology concepts and subjects and enables observation of organisms and events that cannot be seen with the naked eye (Ekici, 2016). Although there are various microscopes, the most commonly used one in schools is the light microscope (Çetin, Bayboz, & Harman, 2014). Some of the microscope types according to their intended use are light microscope, stereomicroscope, polarization microscope, and electron microscope (Uzel, 2016). Students often need microscope images, especially in some laboratory courses. According to Morrison and Gardner (2015), using a mobile phone can be a very good method for students to capture an image under the microscope. To do this, students hold the camera lens of their phones over the eyepiece lens of the microscope and try to capture a clear image. However, in this technique, it can be quite difficult to properly align the focal point of the phone's camera lens with the eyepiece lens of the microscope. For this, students need practice, patience, and a steady hand.

Microscopes are the most commonly used tools in laboratory courses, which are the application areas of biology courses. Photographing the images obtained by students with microscopes is very important in terms of providing many benefits such as concretizing their knowledge, supporting permanent learning, and ensuring easy learning. This study aims to determine the opinions of preservice biology teachers regarding the use of mobile phones in laboratory courses.

Method

Research Model

Qualitative research method was used to determine the opinions of preservice biology teachers regarding the use of mobile phones in laboratory courses. In qualitative research, it is a research method in which the findings are obtained by analyzing the data obtained from sources such as observation, interview, and document and placing them in appropriate categories (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz, & Demirel, 2020).

Study Group

The study group of the research consists of a total of 77 preservice biology teachers studying in the 1st, 2nd, 3rd, and 4th grades of the Biology Education Department of a state university. The gender and grade levels of the preservice teachers participating in the research are given in Table 1.

Table 1. Distribution of demographic information of the study group

Demographic characteristics		**f**	**%**
Gender	Female	61	79.2
	Male	16	20.8
Class level	1st grade	19	24.7
	2nd grade	20	25.9
	3rd grade	22	28.6
	4th grade	16	20.8

Among the pre-service biology teachers participating in the study, 16 were male and 61 were female. In order to ensure the confidentiality of the identity information of the preservice teachers participating in the study, the numbering was carried out independently of the study. For this reason, the first teacher candidate was named as PT1 …… and the 77th preservice teacher was named as PT77.

Data Collection Tool

The Student Opinion Form on Photographing Microscope Images with Mobile Phones, which was prepared by the researchers after scanning the necessary literature and finalized after receiving expert opinion, was used as the data collection tool. In this measurement tool, 7 open-ended questions were asked to determine the opinions of preservice teachers regarding the use of mobile phones in laboratory courses. During the data collection phase, preservice teachers were asked to answer the prepared open-ended questions.

Data Analysis

The content analysis method was used in the analysis of data obtained from the Student Opinion Form on Photographing Microscope Images with Mobile Phones. In content analysis, similar data are grouped within the framework of certain concepts and themes and interpreted by making them understandable (Yıldırım & Şimşek, 2013). Frequency and percentage values were used in the presentation of the data. In addition, the data were supported with sample teacher candidate opinions. The obtained data were analyzed by two researchers. Miles and Huberman (1994) reliability formula was used for the reliability of the data. The agreement between the coders was calculated as 90%. It is recommended in the literature that this rate should be 85% and above (Miles et al., 2020).

Findings

First of all, the research sought an answer to the question, "Have you ever used your mobile phone to take microscope images in laboratory classes? If your answer is 'Yes', please write in which laboratory classes you used it" and the findings are given in Table 2 and Table 3.

Table 2. Responses to the question "Have you ever used your mobile phone to take microscope images in laboratory classes?"

Responses	f	%
Yes	73	94.8
No	4	5.2

Table 2 shows that 94.8% (f=73) of the participating preservice teachers stated that they had previously used their mobile phones to take microscope images in laboratory classes, while 5.2% (f=4) stated that they had not used their mobile phones to take microscope images in laboratory classes.

Table 3. Laboratory courses where preservice teachers used mobile phones to take microscope images

Laboratory Courses	f	%
General Zoology Laboratory	45	8.3
General Botany Laboratory	45	8.3
Laboratory and Experimental Technique	35	6.5
Cytology Laboratory	45	8.3
Seedless Plants Laboratory	53	9.8
Invertebrate Animals Laboratory	42	7.7
Histology Laboratory	51	9.4
Seed Plants Laboratory	39	7.2
Vertebrate Animals Laboratory	31	5.7
Biochemistry Laboratory	28	5.2
Plant Morphology and Anatomy Laboratory	29	5.4
Plant Physiology Laboratory	23	4.2
Animal Physiology Laboratory	32	5.9
Embryology Laboratory	15	2.8
Microbiology Laboratory	13	2.4
General Biology Laboratory	16	3

When Table 3 is examined, it is seen that preservice biology teachers stated that they recorded microscope images with their mobile phones mostly

in the General Zoology Laboratory (f=45) and General Botany Laboratory (f=45) courses.

Secondly, the research sought an answer to the question "What are the advantages of photographing microscope images with your mobile phone in laboratory courses? Explain." and the findings are given in Table 4.

Table 4. Responses to the question "What are the advantages of photographing microscope images with your mobile phone in laboratory classes? Please explain."

Codes	f	%	Sample Expressions
Permanent learning	58	40.5	*PT63: Since we have the image, it allows us to look at the theoretical part more holistically while studying. We understand the subject better.*
Reuse	50	34.9	*PT8: After the lesson, I was able to look back at the parts that I was confused about.*
Convenience	25	17.4	*PT9: Since my eyes are bad, I can take a photo of the image and enlarge it.*
Time saving	6	4.1	*PT22: It saves time.*
Motivation	4	2.7	*PT17: It increased my motivation.*

Table 4 shows that preservice biology teachers think that taking microscope images provides advantages such as permanent learning (f=58), reuse (f=50), convenience (f=25), saving time (f=6), and motivation (f=4).

The third question in the research was "What are the disadvantages of photographing microscope images with your mobile phone in laboratory lessons? Please explain." and the findings are given in Table 5.

Table 5. Responses to the question "What are the disadvantages of photographing microscope images with your mobile phone in laboratory classes? Please explain."

Codes	f	%	Sample Expressions
Time consuming	39	32.5	*PT15: Sometimes it can take a long time to capture a clear image.*
Rote knowledge	33	27.5	*PT33: Since we are taking photos, we cannot examine them carefully.*
No disadvantages	20	16.7	*PT37: I think not.*
Technical issues	18	15	*PT41: My phone's memory fills up quickly.*
Distraction	10	8.3	*PT10: If I receive a message or notification on my phone, I get distracted.*

Table 5 shows that pre-service biology teachers stated that photographing microscope images has disadvantages such as time consuming (f=39), rote knowledge (f=33), technical issues (f=18), distraction (f=10). 20 people said that there were no disadvantages.

The fourth question in the research was "Which subjects did photographing microscope images with your mobile phone in laboratory lessons help you learn better? Explain why?" and the findings obtained are given in Table 6.

Table 6. Answers to the question "Which subjects did photographing microscope images with your mobile phone in laboratory lessons help you learn better? Explain why."

Codes	f	%	Sample Expressions
Cell and cell divisions	51	44.8	*PT71: It made it easier to understand the structures in cells.*
Tissues	48	42.2	*PT68: Taking photos of tissues made it easier for me to understand.*
Microscopic organisms	10	8.7	*PT13: It is good for examining microscopic organisms.*
All topics	5	4.3	*PT52: I think it is useful in all subjects.*

In Table 6, preservice teachers stated that photographing microscope images helped in learning about cells and cell divisions (f=51), tissues (f=48), microscopic organisms (f=10) and all subjects (f=5).

The fifth question in the research was "How did you later evaluate the microscope images you photographed with your mobile phone in laboratory lessons?" and the findings obtained are given in Table 7.

Table 7. Answers to the question "How did you later evaluate the microscope images you photographed with your mobile phone in laboratory lessons?"

Codes	f	%	Sample Expressions
Preparing for exams	55	35.5	*PT53: I used it while preparing for the exam.*
Course material	41	26.5	*PT25: I am saving the photos I took. I will use them in my class presentations.*
Sharing with others	39	25.1	*PT12: I shared it on my social media.*
Preparing reports	20	12.9	*PT75: I use it while preparing my lab reports.*

As can be seen from Table 7, the microscope images photographed are used by the preservice teachers for exam preparation (f=55), course material (f=41), sharing with others (f=39) and preparing reports (f=20).

The sixth question in the research was "Did photographing microscope images with your mobile phone change your perspective on laboratory lessons? Explain why?" and the findings are given in Table 8.

Table 8. Answers to the question "Did photographing microscope images with your mobile phone change your perspective on laboratory lessons? Explain why."

Responses	Codes	f	%	Sample Expressions
Yes (f=66)	Permanent learning	46	38	*PT39: It increased my memorability.*
	Motivation	26	21.4	*PT27: It provided me with better motivation to take photos.*
	Interesting	18	14.8	*PT56: Taking photos also provided me with an artistic perspective.*
	Reuse	17	14	*PT29: It provided me with the opportunity to look back on the parts I could not understand.*
	Time saving	14	11.5	*PT11: Now I take photos quickly and easily.*
No (f=11)				

Table 8 shows that they think that microscope images create a different perspective in permanent learning (f=46), motivation (f=26), interesting (f=18), reuse (f=17) and saving time (f=14). 11 preservice teachers stated that it did not create a different perspective.

The seventh question in the research was "What are your suggestions to make photographing microscope images with mobile phones in laboratory lessons more effective? Please explain." and the findings are given in Table 9.

Table 9. Answers to the question "What are your suggestions to make photographing microscope images with mobile phones in laboratory lessons more effective? Please explain."

Codes	f	%	Sample Expressions
Technological innovation	34	29	*PT57: Devices that take photos from a microscope can be used.*
Teacher should take	18	15.3	*PT44: Only the teacher can take photos.*
Image should be projected	16	13.6	*PT35: The best photo should be projected on the screen and discussed.*
Extra time should be given	15	12.8	*PT18: A special time should be given for taking photos.*
Photos should be shared	12	10.2	*PT23: The best photos should be shared in the WhatsApp group.*
Training should be received	10	8.5	*PT5: Special lessons and training can be taken for taking photos.*
Extra points should be given	6	5.1	*PT49: Extra points should be given to those who find beautiful images.*
Use in exam	6	5.1	*PT40: The teacher should ask about the photos in the exam.*

Table 9 shows that preservice teachers have suggestions to make photographing microscope images more effective, such as technological innovation (f=34), teacher should take photos (f=18), image should be projected (f=16), extra time should be given (f=15), photos should be shared (f=12), training should be received (f=10), extra points should be given (f=6) and using in exam (f=6).

Discussion and Conclusion

It was found that preservice biology teachers stated that they recorded microscope images mostly with mobile phones in General Zoology Laboratory and General Botany Laboratory courses. In addition, preservice teachers stated that photographing microscope images helped in learning about cell and cell divisions, tissues, microscopic organisms and all subjects. The widespread use of mobile phones and technology by students provides an opportunity for schools and educators to use these devices for teaching purposes (Kiger & Herro, 2015). Ostrin and Dushenkov (2016) found in their study that using mobile phones in anatomy and physiology laboratories increased students' participation and motivation in the laboratory course. In addition, Harper, Burrows, Moroni, and Quinnell (2015) found in their study that students using mobile phones to take photographs of microscope specimens in botany courses increased student participation and that students taking the images themselves helped them make better connections with what they were learning. Ürey and Aydın (2014), in their study using the bio-lab-web method, asked about the positive aspects of this method and coded the answers they received from preservice teachers in a similar way, as recording, examining, comparing, archiving, sharing and environment. The answers given by the preservice teachers to another question asking about the negative aspects of this method were grouped under mechanical problems experienced in tools and equipment and individual problems.

Preservice biology teachers stated that taking microscope images has advantages such as permanent learning, reuse, convenience, time saving, and motivation; while taking photographs of microscope images has disadvantages such as time-consuming, memorized knowledge, technical problems, and distraction. Similarly, Kafyulilo (2012) found that most students felt comfortable learning using mobile phones and thought that using them in the classroom could simplify learning and save time. In addition, it was understood that most students stated that they believed that using their smartphones as a learning tool helped increase their participation in

laboratory classes and made it easier to work for laboratory practices. Brown, Thomas, and Thomas (2014) determined in their study that students wanted to use technologies such as smartphones in their learning environments and found them motivating in increasing their participation in classes.

Creating learning environments with different teaching methods that interact with digital devices such as mobile phones, computers and tablets for students born into the age of technology is effective in increasing students' motivation and success (Elmas & Geban, 2012). Knowing the features of the microscope, which is one of the main tools in biology laboratories, and being able to make the right adjustments according to the material being examined is very important in reaching a result (Uzel, Diken, Yılmaz, & Gül, 2011). Çetin, Bayboz and Harman (2014) stated that in their research, preservice biology teachers were asked whether they had any difficulties in learning the parts of the microscope and if they had any problems, what they were; they received the answers of 'coarse adjustment knob/macrovision', 'fine adjustment knob/microvision', 'revolver', 'objective', 'condenser' and 'diaphragm' from the preservice teachers. In their study, Uzel, Diken, Yılmaz and Gül (2011) asked preservice teachers which of the steps they had the most difficulty in obtaining a clear image with a microscope and they stated that they had the most difficulty in sharpening the image with the fine adjustment knob/microwave. When the results of both research questions are examined, it can be said that sharpening the image will also affect the clarity of the photograph to be taken. When the functions of these parts of the microscope are considered, their effectiveness in sharpening the image and subsequently improving the quality of the image taken from the mobile phone supports the research findings.

Gül and Özay Köse (2019), in their study investigating preservice biology teachers' knowledge of microscope usage, determined that preservice teachers answered the image finding and examination steps correctly at a rate of 29.7%; however, they knew the functions of macroscrew and microscrew but confused their names. While preservice teachers were working in groups in

laboratories, the images they found could cause problems in sharing them between groups during the lesson. For this reason, this interaction is attempted to be achieved by using technology. One of these is to record the images in the microscope and transfer them to the web environment (Ürey & Aydın, 2014). Saraç (2019) reached 50 different metaphors in his study aiming to determine the opinions of middle school students about the concept of mobile phone, which is a technological material, through metaphors. It was determined that the metaphors developed for the concept of mobile phone were mostly gathered in the categories of a tool that changes according to the purpose of use and an indispensable tool for life. Şenel (2016) identified 69 different metaphors for the concept of mobile phone in his study. In the study, it was understood that the students generally had positive views and approaches about mobile phones. However, some students expressed that mobile phones were dangerous and a source of addiction.

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CHAPTER 4

THE DYNAMICS OF PLAY: IMPACT ON HUMAN DEVELOPMENT AND CULTURAL EVOLUTION

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Introduction

Play is strongly related to engagement, which greatly enhances problem-solving skills. Play has been regarded as a manifestation reserved for children, according to Jean Piaget's developmental theory children need to perform pretend play and role-taking activities to develop certain competences (Pellegrini, 2009). Problem-solving through play not only makes the process fun but also makes the child resilient and adaptive-learning to learn to learn to approach real-world challenges with confidence and creativity.

Play tends to be one of the active stimulants of creativity and imagination, operating as a unique medium for exploration and trying out new ideas. Arguably, pretend play develops requisite cognitive and affective processes, which are core elements in the development of creativity (Russ, 2003). In imaginary situations, children take different roles involving different settings with varied outcomes. This kind of process opens up broader aspects of thinking creatively and innovatively. According to scholars, children's play not only reflects the status of their imagination but also stirs further creative pursuits (Aljarrah, 2017). This interaction between play and creativity reveals the role of creative activities in cognitive development and cultural evolution.

The connection between play experiences and the development of critical thinking skills is highly correlated. A cultural perspective, such as critical thinking underlies identity construction, not only as individual processes of reflection but also communication in social contexts and cultural frameworks (Grosser& Lombard 2008). In other words, play offers the child opportunities to question, analyze, and assess various situations thus developing his/her critical thinking abilities. Therefore, various materials and environments children come into contact with during play support this process of enhancing their cognitive openness and disposition for critical thinking (Riede et al., 2018). In maneuvering through the intricacies of playing, a child learns to appreciate the reality that exists adjacent to him; hence, he equips himself with the tools that are essential for decision-making and problem-solving within various contexts.

Social and Emotional Benefits of Play

Play is one of the basic channels through which a child constructs empathy and acquires a sense for appropriate social signals. By joining in playful activities, a child can well place himself in the shoes of others and thus begin appreciating the feelings of others and also start responding to others' emotions well (Milter et al., 2012). This process is very important for their social development in the sense that it helps them to work out and adjust their behavior in various complex social situations. In playing, children learn how to read such non-verbal cues such as facial expressions and body language, which constitute the major part of effective communication. Such skills, though very important during childhood, can become great basic builders of empathetic communication in adult life.

The playful dynamics also highly create the communication and collaboration skills of children. So, children are not just playing to have fun but actually actively honing those skills for good communication and collaboration (Zosh et al., 2017). Activities can be team sports or group games through which they have to put forth their matter clearly, listen to what others say and work collectively towards a common goal. This act catalyzes the emergence of verbal communication skill-namely negotiation and resolution of conflicts, very urgent in personal and professional circumstances. Moreover, in a group game, children are already ready to learn from the variety of opinions and ready to create a successful collaboration with other people who have different interests.

Play also has a large role in human development by promoting emotional competence and resilience. Because play creates a low-stress environment for children to ventilate different feelings, it is a very important requirement for nurturing emotional competence and resilience (Ahmed et al., 2023). For instance, through play, a child may lose some games or may not do whatever he/she wanted to achieve, and thus learns how to adapt to the situation and manage disappointment. Overcoming challenges during the play situation, therefore, helps in attaining resilience since the child can weather the situation

and regulate emotion in real-life situations. As a result, play actively places itself as a central tool for such a function that the child will use in navigating through life confidently.

Play as a Tool for Physical Development

Play is the basic act that leads the children to the development of motor ability and coordination (Sutapa et al., 2021). Running, jumping, and catching a ball thus become some activities through which the child learns or grooms himself to perform better in gross and fine motor skills that are very important for the development of the physical ability of a child. These activities pull or push in the direction of getting children to coordinate with the different muscle groups of their body, developing enhanced physicality and agility. Exploring different movements and actions is also a result of playing and leads to better motor coordination and creativity in children (Pellegrini, 2009). In the process of playing, and especially while pretending, children learn to control their bodies very specifically (Goldstein&Lernerscience, 2018). Therefore they can become confident in physical activities. Motor skills are the building blocks upon which more complex physical activities rest, and these are developed through regular play.

Another important advantage of play is that it supports the promotion of active lifestyles and fitness at an early age. Habitual engagement in physical play by children will most probably instill a culture of movement in them and thus embrace an active lifestyle as they grow up. This can be very crucial in reducing sedentary behaviors that have predisposed many young people to increasing rates of obesity (Yogman et al., 2018). In addition, through play, children try to include exercise as a part of the daily routine, which is an exciting element to do and hence helps the cardiovascular being healthy and strong muscles. Play at the basic level also gives other forms of physical development, including endurance, flexibility, and aerobic capacity, hence making sure that pursuit of fun and intrinsic value in keeping active remains a very key lifestyle choice for pursuit of health and well-being in life (Granero-Jiménez et al., 2022).

The spatial sense and balancing are also derived as highly critical aspects of play contributing immensely toward physical development. In activities such as climbing, balancing the body while walking on a beam or going through the obstacle course, children develop their spatial awareness by understanding how their body relates to space around them (Hedges, 2013). This sense is very important for safe and effective navigation through space because it allows children to judge distance, make movement adjustments, and keep their balance.

The Evolutionary Significance of Play

The survival-adaptation function of play has been among the oldest, perennially interesting theoretical concepts to scholars in many fields of study (Jensen, 2021). The role of this process of development assumes significance in that the skills relevant for a livelihood, like hunting, gathering, and socializing, are perfected. Moreover, play is also a site of safety where individuals can carry out and practice activities without the real and immediate consequences of failure. This inherent quality of being able to simulate various situations from the given situation at hand enhances decision-making and further development of assessing and taking risks. Next, play is also introduced as the forerunner to creativity because it enhances exploration and the combination of elements. All of these components collectively point toward the fact that not all types of play can be trivial—some have to be deemed basic and intrinsic to the very process of survival and adaptation.

The importance of play in human brain development therefore speaks to its evolutionary value. Play behaviors made a major contribution to the development of cognitive and socioemotional skills during early human development (Nijhof et al., 2018). The involvement of play during early life initiated complex neural connections in the process of problem-solving abilities and flexibility. In addition, human children have such long childhoods because they are so very behaviorally plastic over this extended period-the better to respond to rapidly changing environmental conditions (Jensen, 2021). The fact

that humans have extended childhoods means that sensorimotor play during early childhood in real terms constituted a mere training ground for the more complex cognitive processing involved in making cultural and technological innovations. Play was important not only for the individual developmental process of the brain but also for the collective progress of mankind by educating the minds of the youngest members of the species.

The scope of play within evolutionary biology and the development of species involves wider trends of evolution. The following paper discusses play from an evolutionary perspective, as the ultimate force behind social and cultural evolution (Vandenberg et al., 1982). Especially, the frame within which play provides the social interaction and cooperation required for large social structures and cultural practices; it allows the acquisition of knowledge and skills to preserve and generate culture. In addition, it remains possible that playful handling of materials and environments set material culture innovations in motion, which are crucial to human evolution (Riede et al., 2018). These innovations are brought about at the advent of playing activities and have immensely set species development on its path, making the role of play relevant in evolutionary biology.

Cultural Variations in Play Practices

The differences in playing also show what rich history the human has concerning creativity and interaction. In most, playfulness is the human quality of behavior, though it shows differences in expressions in every society (van Oers, 2012). he most interesting difference between the two societies is that one has structured and organized play, very much entailing specific rules and rituals, while the other is more free and spontaneous, children create with free forms. All these differences reflect the various cultural and environmental conditions under which one grows up. While for some, it may be more that the children are expected to engage in cooperative play, hence sharing and working in teams, some others may expect competitive play, single achievements, and leadership qualities. Such insights into the cultural complexity of games are important

simple indicators of the ways in which societies nurture and socialize their young members.

Cultural beliefs and values influence the type of games children play as well as the role children assume during play. Culture permeates and is shaped by children's play through creative assimilation and interpretive reproduction processes (Gosso & Almeida, 2013). For instance, in such a cultural heritage where storytelling is salient in the fabric of society's day-to-day living, then children's play may be seen in the reenactment of traditional stories or in making up new ones for the transmission and preservation of cultural knowledge. Additional, parents vary greatly in their beliefs about the importance and purpose of play, which has implications for the amount of time their children spend playing and the specific activities they engage in. Some cultures view play as crucial to cognitive and social development, while others may see it as a trivial activity far removed from academic pursuits (Roopnarine, 2011). These instances of the cultural contexts regarding play surface the dynamic relationship that exists between culture and individual development.

Other than this, there are interesting blends between cultural interaction and hybridization resulting from the influences of globalization on traditional play activities. The information introduced by globalization to children worldwide has diversified the types of play available and in practice. Most often, these new types of play are predominantly hybrids between traditional games and modern influences (Tuncer, 2023). The above cultural hybridization can be evidenced from the modifications or the addition of game elements made in traditional games to borrow fun from other cultures, representing a more interconnected world in its essence. Though there are internationally popular digital games, most use local cultural themes and narratives to infuse uniqueness into a play that resonates across diverse backgrounds. The delivery in itself enhances the experience of play but hence presents abstractness in the protection of traditional play. That, indeed, would characterize the very essence worldwide, full of life but lively, one that would only ensure responsible engagement with its changing face.

The Influence of Technology on Modern Play

The digital- and virtual-play environments are revolutionary in the play patterns of individuals, especially children. The programs would be filled with video games, interactive applications, and experiences in virtual reality introducing dimensions of play that are gripping and immersive. This has not only been a change within the patterns of existing playful activities but a change at the level of cultural practice where technology prompts change (Jensen, 2021). The rate of cultural change, unlike biological evolution, is faster, and thus, behavior shows an open potential for new, previously unimaginable forms of play to develop. The digital and virtual play environments have unique abilities of creativity and innovation: they open make-believe worlds and situations limited only by the frontiers of advances in technology. It has since resulted in a redefinition of what constitutes play, sans the requirement for physical presence, with the ever-waning borderline that separates reality from fantasy.

The cause and effect relationship that screen time shares with trampling traditional patterns of play has earned concern from teachers and parents in equal measure. As digital devices multiply and their prevalence heightens, kids pour more time into activities displayed on screens and less into traditional play, including outdoor games and pretendin (Muppalla et al., 2023). This has implications for different developmental domains such as cognitive, social, and physical development. Research evidence on the other hand proved that excessive screen time could potentially impede the development of key social skills since it reduces face-to-face interaction and collaborative play experiences (Muppalla et al., 2023). On another note, sedentary screen-based play concerns the physical aspect that may give rise to childhood obesity with its attendant problems. Hence, the relationship between screen and traditional play has to be well understood in the pursuit of an all-around child development. The difficulty is making digital play serve to enhance, not substitute traditional patterns of play while managing children's access so that they appreciate the best of both worlds.

Balancing the digital play with physical play and social activities gives space for the development of the whole child. There are very many merits that come with allowing the child to engage in digital play, such as improved problem-solving skills and the likelihood of coming into contact with diverse learning experiences. However, this digital play must be balanced with physical play if the lifestyle of the child is to be wholesome (Sanne et al., 2018). Additionally, through physical play activities, children begin to develop motor skills, coordination, and general physical well-being—all essential elements for their growth and welfare. Social activities also enforce the interaction of communication skills, empathy, and cooperation that are necessary to go through real relationships. The imposed structure of the environment by parents and teachers will work for and against the strengths and weaknesses of each type of play—providing rich experiences for the children. A balanced approach will hold its place in ensuring that digital play forms one part of a multi-faceted play of children, enriching them in every domain.

Play in Educational Settings

The incorporation of play-based learning into curricula has increasingly become one of the modalities expected to bring about comprehensive development among children. Research has proven that children show excellent performance in various aspects given a playing learning environment, especially in ECCE institutions (Ndlovu et al., 2023). Curricula integrate play as a tool for activity that involves creativity, critical thought, and social interaction, thus constituting fundamental requirements for subsequent academic and personal achievements. Infusing the play within educational frameworks makes the learning situation even more dynamic, involving the fulfillment of specific needs by children. It also facilitates the development of cognitive skills that lead to proper understanding of the teaching requirements and further the social and emotional dimensions of learning, thus providing a sound base for lifelong learning.

The benefits of play on improving scholastic performance are well-founded, hence its role in the educative process is important. Indeed, research and studies assert that students who undergo play-related learning experiences tend to show vast improvement concerning language, problem-solving skills, and executive functions (Yee et al., 2022). These improvements emanate from the fact that play is interactive and experiential based on their concept that the child has an opportunity for hands-on activities. The child can retain better learning information when engaged in playful activities and may apply this information in several instances, thus enhancing his scholastic performance. In addition, play-based learning can always create a positive attitude towards school as it makes the learning process fun and meaningful.

The educator is a prime conduit towards productive play within education and is a way to make play-based learning effective and purposeful. Therefore, by intentionally constructing some play activities that meet the aims of the curriculum, teachers will steer the children towards specific learning while still allowing free scope for the children's creativity and exploration (Nicholson & Dominguez, 2021). The educators have to strike a balance between freedom and structure, giving some of the choices and chances to make decisions that will instill a feeling of autonomy and self-assurance in the children. By observing sensibly and smartly, the teachers will realize how the child has developed and then direct the play session for that individual child. This will make sure that play is integrated into lessons, giving ultimate success and development to the children..

Play and the Development of Identity

Play acts as a very important mechanism through which children are exploring their self-concept and personal interests; thus, they can meet these different identities in an activity of very low risk. In play, the child performs various imaginary roles and situations to his likes and dislikes. This does not only mean trying out different things but during the deep phenomenological analysis of what playing is at its most fundamental level, personal preferences

and identity elements may surface (Hols, 2017). In play, there is freedom and creativity that allows the children to explore themselves and the environment toward building a healthier self-concept. While playing, children do not only amuse themselves but find out about their likes, dislikes, and interests, which play a critical role in the formation of their identity.

The effect of play on gender identity and social roles is extremely profound, for it is through play that children navigate and come to understand the norms and expectations of each gender. The children may usually undertake roles in their playing that reflect the existing norms in society, such as playing house or pretend occupations, activities through which the children solidify their understanding of gender roles. But play presents a golden opportunity for challenging and redefining those roles. An enhanced comprehension of the linkage between play and childhood, as discussed by Holst (2017), reveals that it goes beyond the mere imitation of norm imageries; rather, it enables the child to discover and experience a number of identities and roles (Holst, 2017). Such an exploration gives a keen perception of the fluidity characterizing gender and social roles and enables the individual to work out a more individualized understanding of his gender identity. It is through play that children can experiment with roles that fall outside traditional gender boundaries, leading to a more general approach to social roles.

Play creates cultural and personal narratives in a sense that it is a framework that people use to make sense out of their experience and shared lives. People do this by telling stories and acting out roles in narrative creation that reflects cultural values and personal experiences. The construction of narratives through play is both an innovation of culture and development. This further elucidates the biology-culture interplay where play serves as a channel for the transmission of culture in terms of a person's storytelling (Pellegrini, 2009). It enables individuals to reinterpret and recreate cultural narratives, allowing room for a dynamic and evolving cultural identity. The play-created narratives thus become the cornerstone upon which one can build their place

within a cultural context, which becomes a contribution to the personal and cultural building up of information.

Therapeutic Applications of Play

The play in therapy has been widely used for mental health and trauma because it speaks volumes when it comes to healthy feelings and emotions. The Therapeutic Play will create an implicit assurance of a nonjudgmental articulation within the safety and support given by the environment. The general approach is especially salutary with children who are not yet able to articulate their emotions verbally. For example, the expression of feelings and emotions in creative play experiences in their service fosters creativity. Hence, they become expressive in working through complicated feelings (Chauhan et al., 2024). Because it is non-threatening, play therapy can facilitate the formation of a strong therapeutic alliance, an important aspect in building the trust of child clients with their therapist, and thus the healing process as well (Stewart&Echterling 2016).

Benefits of play therapy can be both for children and adults, proving to be an approach with resilience against different psychological tribulations. For children, play therapy can boost cognitive, social, and emotional skills that contribute to flexibility in coping with stressors (Sanne et al., 2018). Such flexibility is most important in the enhancement of resilience and coping resources that would enhance good mental health on a general note. For the adults, participation in play therapy activities can enhance emotional intelligence as well as resilience, as proved by the impacts of plays on resilience (Ho, 2022). Through play, there can be a psychological readjustment for people of all ages to attain higher psychological functions and emotional stability (Pellegrini, 2009).

Different techniques and strategies are utilized within the play therapy arena for maximum benefits to be accrued. They are individualized to the special needs of each person to assure a unique and rewarding therapeutic experience. For instance, one might engage in role-playing with the client to see

different perspectives and develop problem-solving skills. Sensory play, too, could be integrated for emotion regulation and self-awareness building. Such strategies help create a lively and interesting healing environment for further growth and healing. The dynamism in these techniques points to the many psychological concerns that play therapy can help alleviate, as it fosters long-term wellness.

Future Trends in Play and Development

One of the forces that have continuously reshaped the nature of play for children and adults is the innovation of play materials and play environments. For instance, the integration of technology related innovations has brought about smart toys and interactive playgrounds of action, which adjust to the learner and consequently turns it into a dynamic learning surrounding. Further development includes the provision of challenges to improve cognitive and physical development, challenges that will now vary according to the ability level of the player. Augmented Reality and Virtual Reality are such technologies that have provided an entirely new plane wherein playing is immersive, with actual physical limitations transcended (Hamad&Jia, 2022). The current trend in environmentally conscious actions is another factor encouraging sustainable play materials since such toys and play sets are manufactured from either biodegradable or recycled products. Herein, these innovations are ability-based changes that blend the traditional form of play with modern technological advancements, which depicts traditional play forms alongside modern technological developments (Riede et al., 2021).

Looking into how play might further evolve in society, it would be in finding that digital and physical play spaces will increasingly merge in ways that make the boundaries between the real world and virtual experience even more porous. With technology advancing at an even greater pace, customizing and evolving play into personalized and adaptive experiences can open new and rather promising avenues for individual learning and development. It may lead to changes in interactions between individuals, influences such things as online

multiplayer gaming, and creates virtual communities. Rather optimistically, it can be argued that the role of play in cultural evolution will be instrumental in expressing core cultural values that enable adaptation to changing social and other human conditions. This dynamic aspect of the theory on cultural evolution is well explained through cultural evolutionary theory, where culture itself is an information-transfer system; therefore, play is a catalyst for innovation and the progression of culture (Riede et al., 2021).

Conclusion

Playing impinges on a rather wholesome and diversified route of human growth and culture, portraying the strong effects across cognitive, social, emotional, physical or even domains of therapy. Play served an essential role in reasoning operations and encouraged creativity, critical thinking, and problem-solving skills; also, it allowed empathy and communication abilities within a social context. Its contribution to physical development is very important because it enhances motor skills and encourages active living. Play also has biological relevance tracing the survival mechanisms engraved in human history as well as the development of the brain at the time. From the variety of cultures about play activities, it can be seen how cultural forces, as well as technological advancements that produce newer opportunities and challenges regarding play in modern settings, affect behavioral play. When there is education, identity development gets enhanced through playing; thus, its therapeutic applications then become even more essential in giving psychological healing support. Looking ahead, the future of play promises innovations and adaptations. There is a need for further exploration into its complexities and potential for fun to ensure and where necessary manage the dynamics that we have to appreciate play as a source of wholesome development and the uniting fabric for a long time to come.

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CHAPTER 5

9TH GRADE STUDENTS' TIME MANAGEMENT PERCEPTIONS AT DISTANCE EDUCATION: TURKEY EXAMPLE DURING THE COVID-19 PANDEMIC*

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* This study is derived from the thesis titled "Time Management Perceptions of 9th Grade Private School Students At Distance Education During The Covid-19 Pandemic" conducted by Duygu ÇAVUŞOĞLU under the supervision of Assoc. Prof. Dr. Osman Yılmaz KARTAL in the Master of Arts program with thesis in Educational Programs and Curriculum, Department of Educational Sciences, Graduate School of Çanakkale Onsekiz Mart University.

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Introduction

In February 2020, following China, total 24 country including Turkey experienced a harsh time by transferring their education system from schools to distance models due to the Covid-19 pandemic. In crisis situations, there occur a variety of needs of each different group in the society. From our concern, this crisis has caused both all education system to transform and all students to undergo a dramatic change. IASC Guidelines on Mental Health and Psychosocial Support in Emergency Settings (2007) states that in crisis situations students are in need of psychological and sociological support other than academic support. All stakeholders of education, primarily parents and teachers are supposed to be responsible for creating environments which can affect students in a positive way.

As a result of the break in face-to-face education, distance education came into prominence since this crisis was to be handled with care and consideration. Distance education is suggested to have both positives and negatives; however, it has become the first and the most immediate solution in the case of the pandemic. To highlight the advantageous sides of it, the following descriptions are considered vital. According to Zan and Zan (2020) distance learning is stated to be an advantage in terms of time and cost. The fact that teachers and scholars record their online lessons enables students who cannot attend or tend to revise the lessons to access those authentic video clips. Asynchronous learning enables students to access lesson recordings when they are available and when they would like to (Simonson et al. 2006). From those perspectives, distance education seems to bring about convenience and practicality to education.

However, it is aforementioned that distance education has some negative sides in student live. In the first place, some recent studies show students face with some difficulties and challenges during distance education (Sercemeli and Kurnaz, 2020). One of the mentioned challenges is time management (TM). In Italy, a study conveyed with a group of high school students showed some discrepancy about students' TM skills. The parents and the students suggest the students' TM skills improved in comparison with the

period before the pandemic while the teachers acclaim the opposite (Giovannella et al. 2020). Another research finds that more than 50% of the students stated that web-based education does not leave space for daily planning and does not contribute to developing a sense of responsibility (Keskin and Kaya, 2020). The result of a research done with the students of a distance accountant course showed that 44 % of the students claimed that distance education did not allow them to use their time effectively (Sercemeli and Kurnaz, 2020). A conclusion can be drawn from the given results that the educational implementations during the Covid-19 pandemic trigger some time management problems in student life.

On the other hand, it deserves to mention the fact that there is a group of students who can organize their own learning process by themselves has been revealed. Mintz (2020) finds that students who can learn themselves consider distance education to be more practical for themselves than traditional settings. Sercemeli and Kurnaz (2020) find out that some participants express they can focus on better and use time efficiently, so they consider distance education a time-saver. There are some techniques to be suggested for students which are walking with the time, prioritizing, scheduling life, making a to-do list, learning to say 'No', taking complete rest, focusing on one's aim, sparing time for entertainment, testing one's inner strength. On the other hand, it is possible to understand that TM is not conveyed properly with a few typical indicators. Therefore, some of these indicators are being in a hurry all the time, frequent procrastination, low motivation and energy, disappointment, restiveness, indecisiveness among options, setting up goals and having difficulty in accomplishing goals (Center for Good Governance, 2001). As seen in the examples, TM has both strategic and affective perspectives. In the online learning model, while students need to have improved self-regulation and self-directive skills, K-12 students are portrayed to have insufficient competence in TM and are suggested to be supported with counseling activities at schools (Bozkurt, 2020).

Time has a crucial place in learning and teaching (Caldwell et al. 1982). In fact, managing time means managing yourself (Kirillov et al. 2015).

In educational institutes, TM is determined by school climate, administrators, and teachers. Crone and MacKay (2007) suggest that students are not aware of how to use their time and teachers should have an active role in teaching students how to manage their time effectively. Zimmerman and Bandura (1994) suggest that TM is related to personal, environmental factors and the variables dependent to learning ability of an individual. TM seems to have a close relation to setting up goals and self-discipline.

In this period, authorities took a range of actions to overcome the challenges of the lockdown and distance education. State schools, as well as private schools, took certain steps to implement distance education since the outbreak. In the meantime, what type of differences occurred between the opportunities provided by state schools and those by private schools became a discussion topic. Private schools suggested offering a more systematic program and implementation to meet students' needs than state schools. Students were subject to take responsibility for their own learning and use time effectively in that period. Hence, private school children were one of the subjects to undergo this situation and it was crucial to investigate their TM perceptions to reach an understanding. Our concern was to understand the students' time management perceptions, so we have determined to examine a 9th-grade-student group who attended a synchronous program of a private school.

This study aims to reveal three questions:

(1) How do the students interpret time during the lockdown due to the Covid-19 pandemic?
(2) How are the students' time management perceptions?

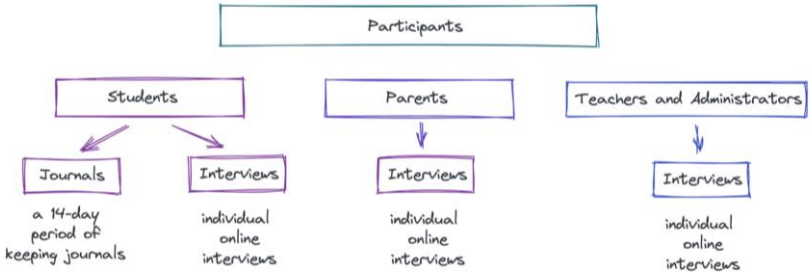
Method

Design

The study is a qualitative research analysed with the postpositivist paradigm. We aim to interpret the time management perceptions of the 9th-grade students attending distance education programs of a private school with the method of phenomenology since it is used to interpret the lived experiences of the students. According to Miller (2003), phenomenology, one

of the qualitative research designs, is a method of studying the lived experiences of a certain group. Another basic purpose of phenomenology is to bring the personal experiences related to a specific phenomenon to generalized grounds (Creswell, 2007).

The participants of the study were chosen regarding criterion sampling. This study has one main participant group who were the student participants and two sub participant groups who were the parent participants, and the teacher and the administrator participants. Our main aim to have the three different participant groups is to ensure corroboration of data and convergent validation with data triangulation. The student group, who were the 9th graders, are the first grade of high school in Turkey. Besides, the student group was separated into 3 sub-categories according to their high school entrance exam results. The groups are cited as Group A, Group B and Group C, which respectively consists of the students with the highest scores, the students with mid-level scores and the students with the lowest scores. The research was conveyed with semi-structured interview questionnaires consisting of open-ended questions via one-to-one online interviews. Also, the student group were subject to keep a 14-day dairy related to their time. To ensure the data validation, we interviewed the parents, the mentor teachers, the school counsellor, and the school administrators, and evaluated their views, as well.



Findings

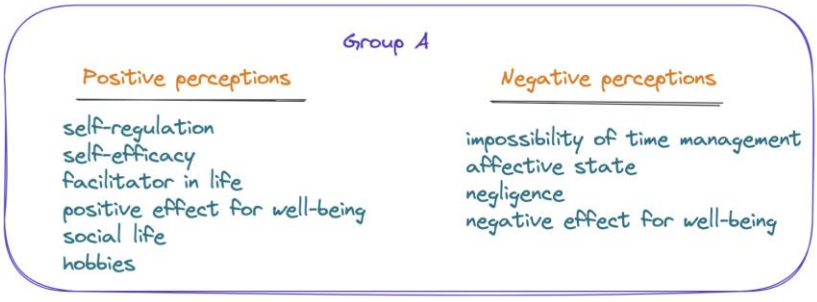
Time awareness of 9th grade students during the Covid-19 pandemic

Time has been interpreted in different ways by the three subcategories of the participant students. Group A state that time is something passing fast and impossible to manage. This group have a tendency to obey the rules and adapt a program imposed, but when they are on their own, they state that they do not feel competent to manage their time. According to the parents, Group A students do have time awareness. Group B have a general interpretation of time as something unmanageable, something passing fast, something like a chaos, and something which lost its value in the pandemic period. It can be stated that Group B do not have many positive perceptions of time during the period. According to the parents, the students have improved time awareness triggered by outside factors during the distance education. Group C perceive time as something whose speed changes depending on a task, something dominantly slow, and something having a negative effect on their wellbeing. Group C's parents think that this group of students do not have a certain time awareness. The teachers and the administrators state that when school which is a factor offering the students a framework of time has stayed away from students' lives, students have lost their awareness of time. Distance education has left children without directive instructions, that is why students become negligent of time, believe impossibility of TM, and prefer procrastination.

From the given findings, we conclude that Group A and Group B interpret time as something passing fast. We interpret this as a result of a chaos caused by the lockdown. Considering the students showed a better performance than the last group in the high school entrance exam, it is assumed that they got a strict study plan for the last months, and they experienced how to accomplish their goals by getting admission and scholarship from a prestigious school in their city. Since the pandemic rose to the occasion at the very early months of their high school period, they may have continued their studying habits in the new courses. However, in the lockdown, they stayed out of the formal timetable somehow due to participating the lessons at home without sparing any time to commute to school. Yet, Group C regard time as something very slow and if there is a special task to do, then it passes fast. This may result from the lack of goals and motivation related to using their own time.

Students' Interpretations of their own Time Management Performances

Group A



The findings from the diaries and the interviews show that Group A possess varying individual interpretations. The most dominant positive finding is the students consider TM directly related to self-regulation and self-efficacy. Scheduling time and day, planning daily activities and delegating time are some techniques used by the students utilizing time. Students consider managing time is a facilitator in their lives since it contributes to their

wellbeing, and they can spare time for social life, that's why they think TM brings comfort and pleasure into their lives. Group A mostly opt for controlling their time and being aware of the activities they are doing. Leaving time to flow is not a common theme for this group, but they prefer it in some situations.

> 'Every day, I wake up at 7.30 and have my breakfast. If I do not make a plan, I do not have discipline.' (Student 4, (S4))
>
> 'I made time planning since I would like to have more time for my social life.' (S1)
>
> 'My responsibility about TM is to attend in lessons and doing my homework.' (S5)

Also, some students consider TM as a positive impact on their wellbeing.

> 'I used some strategies today and benefited from them, sparing time for my friends.' (S1)
>
> 'Planning your time is important not to waste it.' (S2)

The students have different opinions related to applying time management techniques (TMT). Some students in the group decide whether they will apply TMT considering their affective states, which may be supported with the previous finding. The students' wellbeing and using TMT may have a relation affecting one another in both positive and negative ways.

> 'It depends on my mood. I may not plan every day of my life.' (S3)
>
> 'I have got some friends to do things in an organized way and other friends to live randomly.' (S3)

When there is an unexpected situation, they can lose control and the plans can be left behind for some reason. The fact that they do not have a strong passion to stick to their plans and they think time is impossible to manage at some point may be a result of their not being competent enough to take the responsibility of their own time.

> 'It is like a domino game, once skipping one, all stay for the last day.' (S1)
>
> 'When it is Friday, I can abandon some tasks forever.' (S5)

'I couldn't manage my time because some unexpected things happened.' (S2)

Some students think that the idea of planning makes a negative impact on their well-being since it may be unfavorable and troublesome to take the responsibility of their own time and face with failures.

'If the school was open physically, I would go there, but now I do not plan anything.' (S3)

'I don't want to see any incomplete tasks in my notebook, I do not feel pleased when I cannot complete everything I have planned.' (S5)

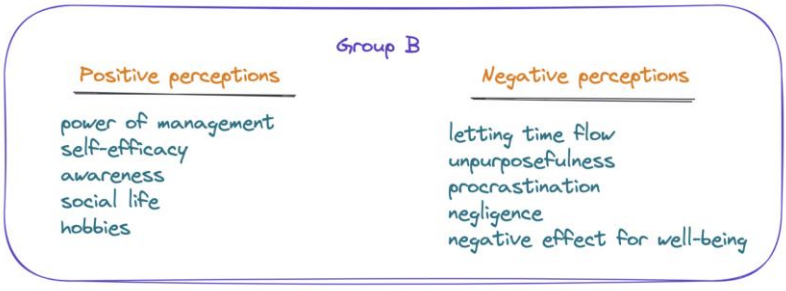
There are some cases that the students do not have any goals, passions or plans to accomplish and they show negligence. That's why they consider TM is not necessary for their lives. This may be related to their age since adolescence is a period when it is difficult to keep balance on the things.

'I did not use TMT because I did not need them.' (S1)

'I only surf on the net on the phone in my free time.' (S2)

'I have very limited daily activities, so I do not use TMT.' (S1)

Group B



This group of students dominantly regard TM as a negative effect on well-being, that's why using TMT is not preferred by them. They have more tendency to leave time to flow and feel out of the frame given by outsider obligations.

'School program is fine, but boring. So, I do not prefer more planning in my life.' (S6)

'Some hitch can occur if we try to do everything in a planned way.' (S8)

'I think I cannot spend my free time well when I plan it.' (S10)

Another distinctive theme is students believe that it is not necessary to make an effort to manage time, which shows they are indifferent to time unless TM is enacted by outer factors. Also in this group, some comments which deserve attention are related to the students' having no goals which accounts for why they do not find TM necessary. They do not consider TM vital since they feel comfortable and free without those types of rules in both their academic lives and social lives.

'You do not need it if everything goes well.' (S7)

'There is TM in my life willy-nilly which bores me, but it is fine not to have it in my free time. I act as I feel like.' (S6)

'We, of necessity, attend in the classes, this is something out of my preference. I feel I am more successful when I let it flow.' (S8)

Some students in the group believe that TM and planning bring them the power of management. Also, managing time causes them to feel self-efficacy and feeling of purposefulness/awareness. Given that, some of the students in the group regard TM as a contributor in their lives and see the power of success which comes from planning and accomplishing goals, which accounts for the relation to their wellbeing. These individuals seem to have tried to make plans and fulfil them. They may not have improved self-regulation skills yet, but these remarks may be the signs of their primitive skill to be improving.

'I feel ambitious when I do the planning and successful when I completed my plans.' (S10)

'I understand how important time is day by day. I think we can plan for our needs and be happy.' (S9)

'When I make a program, I can stick to it.' (S7)

The students in this group make some remarks about their hobbies and social life when they are asked about TM, which explains they get motivated to make plans with their peers.

'I used TM to go out with my friends and it worked.' (S8)

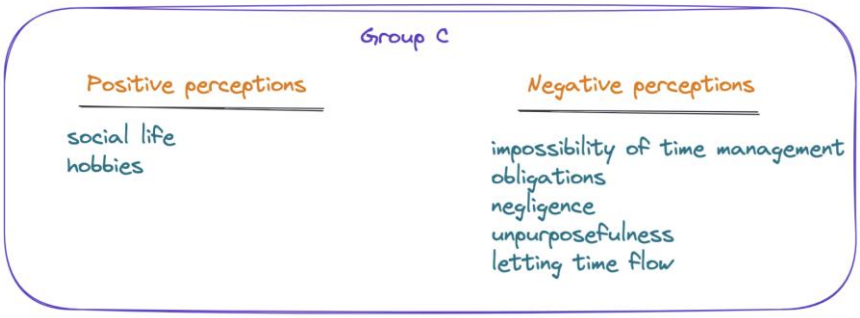
'I made a plan to play games.' (S6)

As in Group A, there are some comments showing some relation between using TMT and students affective' states. They have tendency to direct their state of not planning or not being stick to the plans or procrastination to their mood. It is obvious that some students in the two groups are not inclined to be a part of strict plans, instead they more like to listen to their inner states and act as they direct them.

'I did not stick to my plan, playing games seems more attractive than studying.' (S6)

'Some plans can fail; it depends on my mood.' (S9)

Group C



Group C have a less complicated perception, relatively. These students mostly believe the impossibility of TM. They show negligence toward using the time effectively and they would like to let their time flow since they suggest after schoolwork and other obligatory stuff, they have very little free time for themselves. TM and planning mean obligations for them. Obviously, the members of this group see TM as a rule maker, so they would like to avoid the rules as much as possible.

'It is ridiculous to make a plan for a month from today.' (S15)

'I don't make plans because after lessons doing homework takes all the time and you have nothing to plan.' (S13)

'I let my life flow.' (S14)

'I do not think of studying when there is a chance to sit freely. I want to live what time brings me.' (S11)

Most of the remarks of the students related to the negative impact of TM on their lives can be accounted for they do not have specific goals and the ability to make plans. During the interviews, from the students' tone and attitudes, it could be deduced that they consider implication like TMT meaningless and something that can restrict their actions.

'Weekdays, unfortunately, are spent with managing time, so I do not like to plan my weekends.' (S14)

'I feel restricted with planning.' (S11)

'Planning causes me to lose my interest.' (S11)

To Group C, in spite of avoiding planning and managing their time, they show some tendency to make plans for hobbies and social life. Also, few of their ideas show TM can be preferred in some cases. Clearly, Group C regard TM as something useful if there is an obligation or a strict situation, otherwise, they do not consider it attractive. Their negligence and unawareness may, to some extent, be explained by their academic history, which is that they are not inclined to study strictly in their previous years and they have not got to manage their time aggressively before.

'TM is something I use for making plans with my friends.' (S11)

'Today I made a plan to meet my friends.' (14)

'I started to plan and accomplished the first part of it.' (S12)

'I use TM to avoid a chaos.' (S14)

Parents views about students TM performances

Group A's Parents

Group A parents' statements and the students' statements have some common points which are self-regulation, obligations, self-efficacy, purposefulness, and social life. As the students disclose when they prefer

managing time, they do it for organizing their lives and complete the tasks as fast as possible.

'Even if she doesn't go to school, she has a plan similar to a school program.' (Parent 5, (P5))

'No problem with planning and sticking to it.' (P1)

'He does it himself and obeys it with no interference.' (P4)

'She can motivate herself.' (P3)

'She can spare time for violin practice and friends regularly.' (P3)

'For him, it is important to hang out with friends.' (P4)

On the other hand, mostly, the parents suppose that managing time and planning is not a habit in their children's lives because they do not want to have any restrictions and obligations other than their schoolwork and some similar academic activities. Therefore, the parents' remarks reveal themes like the impossibility of TM, negligence, lack of goals, a negative impact on well-being and letting time flow.

'No plans for the rest of the time, only computer games.' (P1)

'Every activity is mixed in one another since they are always at home.' (P2)

'TM makes them angry and nervous.' (P1)

'They procrastinate frequently these days.' (P3)

'If there is nothing obligatory, she lets time flow.' (P1)

Group B's Parents

Group B are said to use TMT mostly for personal interests and socializing according to the parents.

'She manages her time to spare some more time for her friends.' (V9)

'He is good at time management when going out with friends.' (P8)

Some parents state that TM means self-regulation and obligations for their children. This group of parents also mention that the students are fed up

with managing their time due to the tons of the tasks coming from the school and some other outsider sources. They are prone to procrastination and letting time flow as well as showing negligence to time.

'He is punctual when it comes to the classes.' (P8)

'Feels as if in a mold.' (P7)

'No anxiety related to time-wasting, always sandwiching tasks and works.' (P7)

'She does not spare time for the things she dreams of doing, like practicing the piano.' (P10)

'He has some hitches about TM, but it is necessary for him to use TM all the time.' (P10)

'He has no interest in time, likes to be relaxed most of the time.' (P6)

Group C's Parents

As in Group B parent comments, this group is claimed to use TM for their hobbies, social life, and as a tool for self-regulation.

'Their expectation from time is only about socialization.' (P11)

'He cannot control time on the games.' (P12)

'..got a new habit of telling us what time she will be back after meeting her friends.' (P14)

'He has plans for academic tasks.' (P15)

'He is responsible for his homework.' (P15)

Group C parents claim that the students are negligent about TM, and they opt for letting time flow. Besides, according to the parents' remarks students think that managing time and making plans have a negative effect on their lives. Their affective states seem to be a powerful drive in their decision-making process.

'He is only pretending to make plans, but not applying them.' (P11)

'No goals, no challenges. He has no passion of managing his life.' (P14)

'..no weekend planning, that is how he likes it.'(P13)

'The words related to TM make them angry.' (P12)

the Teachers and the Administrators' Comments on the Students' Time

The teachers and the administrators suppose that school is a crucial determinant in students' life to understand how they spend their daily life and make plans afterwards. They think that the behaviors and attitudes students show and perform stay the same when they change learning environments.

'We can categorize the students into two. On one side, there are the ones who can organize their own lives, on the other side is the ones who cannot make any plans. The first group of students are organized in all life, have awareness of schooling and time, and self-regulation skills.' (Counselor (C))

'Students with adaptation skills at school have no problems with adaptation to distance education.' (Administrator 2 (A2))

'The students with self-motivation can go on well even in this period.' (Mentor 4 (M4))

'There are some students who do not need any support to complete themselves.' (A2)

According to the teachers and the administrators, the students with goals and self-regulation skills are adaptive to distance education. Since the other group does not know how to make arrangements and does not have goals, they show negligence.

'They are in a mode to procrastinate everything.' (M3)

'They spend this period inefficiently and do not make any planning.'

The teachers and the administrators suggest that the students easily escape academic life's challenges and avoid facing failures if they do not use TM. With this respect, TM is considered to be related to a negative impact on well-being.

'They think any suggestion to improve their free time is rubbish.' (M1)

'They think they will be frustrated and fail, so they are coward to take risks.' (M2)

'Our students, by losing their time awareness, experienced lack of motivation and lack of attention. (A1)

Another issue is that the students lack emotional support in their family and friendship. Nearly all of the students' both parents work full-time and do not spare enough time to direct and take care of their children.

'They are always playing games since they offer them materialistic happiness.' (M2)

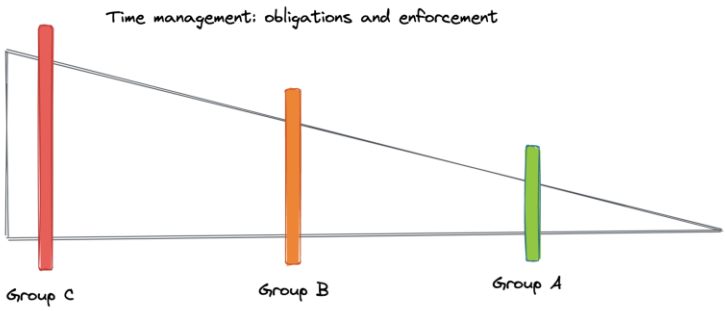
'The individual cannot have self-regulation, self-value and self-discipline if not supported well during the childhood, so we can observe them failing now.' (M2)

We can state that since some do not have self-efficacy, they tend to let life flow. Also, the teachers stress that these students need counselling support.

'The main reason why they do not use TM is that they are more inclined to their social lives.' (C)

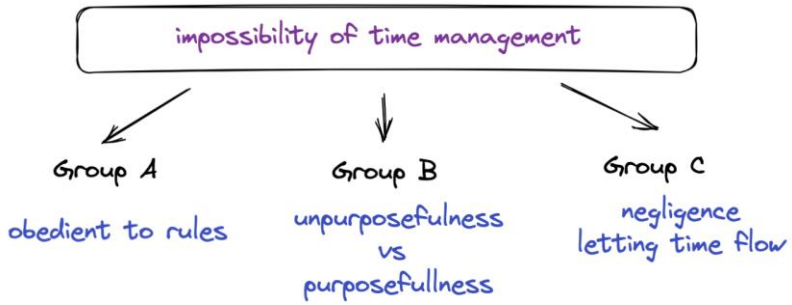
'If they do not attend the classes, they won't be allowed to use the internet or other devices to play games.' (M3)

'They do not have anything to make them move, so they do not use TM.' (A1)



There is a common perception that all groups believe the impossibility of time management and another commonly shared idea is TM is a great tool for obligations. Considering the three sub-categories of the students, Group A are the most capable of and responsive to TM while Group C can be said to be negligent to TM. Group A consider TM as a facilitator in life and a positive

impact on well-being. Group B can be stated not to have clear goals and they regard TM as a negative effect in their lives. It can be said that Group B do not have improved self-efficacy. Group C let time flow in most cases and prefer TM in social situations.



The interview findings of the parent group reveal that the three sub-categories have distinctive TM perceptions and performances. The parents of Group A declare TM means self-regulation, hobbies, social life, obligations, and self-efficacy. The parents of Group B suggest that TM means hobbies, social life, and self-regulation while the tendency of procrastination and letting everything flow is high. The parents of Group C state that TM means hobbies and social life, yet they have developed negligence and the habit of letting things flow. In the light of these findings, Group B and Group C are prone to time traps. These students can be considered to be unaware and unpurposeful and incapable of using goal-setting strategies. The teachers and the administrators claim that the students with improved time awareness can manage the distance education period efficiently.

Discussion

In our study, Group A regard TM as a tool of self-efficacy, self-regulation, and a positive impact on well-being. A similar finding is that Eldeklioglu (2008) discovers that the high school students with low self-esteem show low attitude of TM. Aeon and Aguinis (2017) state that the students

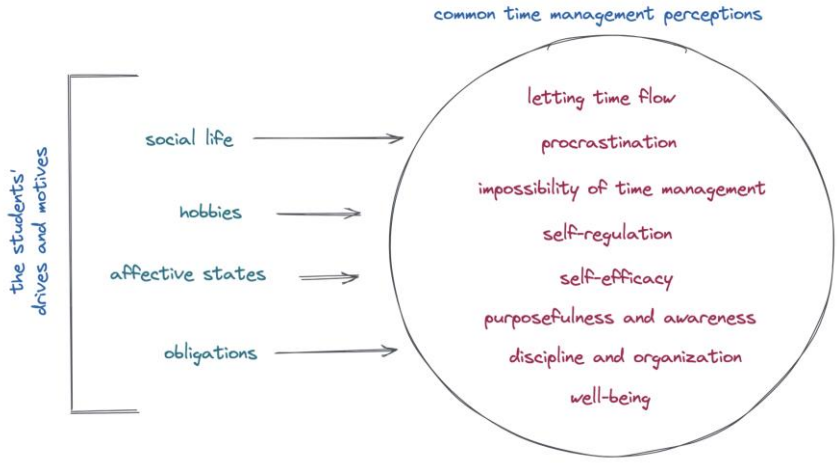
associate TM with a robust purposefulness, high self-esteem, good health and positiveness.

This study discloses that all of the student participants deem TM to match with self-efficacy, purposefulness, awareness, and self-regulation in their lives. MacCann et al. (2012) find that the students with a sense of responsibility have improved TM attitudes. Similarly, Bond and Feather (1988) state that TM is related to purpose, good health and optimism. The other similar findings are seen in Macan et al. (1990)'s research that TM is linked to pleasure. Therefore, it can be deduced that when students have goals and some purpose in life, they have a tendency to realize themselves and prefer using some tools for time management. Their belief to realize themselves or accomplish their goals can show they have self-efficacy, purposefulness and awareness.

In contrast, a distinctive finding is that some students in each sub-category depict time management something having a negative impact on well-being. The study by Eldeklioglu (2008) unearths that TM is not sufficient to have inner peace. Ozgen (2000) suggests that the people who set goals and make plans to fulfill three goals are the ones who feel satisfied with their success. Mukhtarova (2017) sets forth that TM has a fundamental place in reaching goals. According to this study, the students with TM attitude have goals while the students not paying attention to time management seem to have no goals to reach. Also, the remarks from the parents, the teachers and the administrators confirm this finding. The students state that success, setting goals, and controlling the time make a positive impact on their well-being. Accordingly, the parents state the students with no goals do not make any efforts in their daily lives and show unhappiness or aggressivity. The teachers and the administrators justify the idea by saying the students with plans are ambitious and motivated to be successful. The others are seeking for immediate happiness and a lifestyle to entertain themselves. Erdem et al. (2005) states that in the research about TM the highest score is seen in the students' social planning. Another finding supporting this situation is that although the students are categorized into three according to their academic

performances, in each group there are some individuals believing the impossibility of managing time, regarding TM as something inapplicable, not suitable for their character, and impossible to internalize. They think TM is meaningless to have and use. From this direction, we can conclude that the students having specific goals improve their well-being using TM while the other students having no goals regard TM breaking their well-being and putting their interests and social lives forward.

Conclusion



In the research, the findings gathered from the three student groups show consistency. Also, the remarks of the parents, the administrators and the mentors mostly support the findings collected with diaries and student interviews. From a broad perspective, it can be concluded that 9th graders time perfectives are strongly depended on their affective states. This is a clue to understand how this aged people decide and determine their priorities. The fact that social life and hobbies stand forward considering their time management represent the characteristic of their age group. Since they are adolescents, they have more tendency to socialize and do the popular activities their communities lead them to, which may be going some sports trainings or playing online games. At the same time, in each group, there is a tendency to let time flow, which can be interpreted as managing time and making plans

mean school and strict study plans for the students. This idea was supported by the parents, the administrators and the mentors' two distinctive remarks, which are that school form students' life, and that planning means rules and obligation to them. A close, yet somehow diverse idea from the parents is the students give priority to their social lives and interests and their related plans whereas they could procrastinate if the plans are related to schoolwork.

It is also understandable the fact that the students with higher entrance exam scores have a better performance to adopt the requirements of distance education and have more improved self-regulation skills than the ones with lower scores is related to their inherited study habits from the previous year. These ideas are supported by the mentors and the administrators' common opinion, which is disciplined students at school are also disciplined in their all life. Obviously, students being aware and self-regulated can be said to have a close relationship with their backgrounds.

Another conclusion which can be drawn is that the students whose statements linked to self-regulation, self-efficacy, purposefulness and awareness, discipline and organization has penetrated in all aspects of their lives. On the contrary, the students who favor for let time flow mind their social life and personal interests more and can be called family-directed followers.

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CHAPTER 6

THE SATISFACTIONS, VIEWPOINTS, AND RECOMMENDATIONS OF UNIVERSITY STUDENTS ATTENDING ERASMUS + PROGRAM

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INTRODUCTION

The Erasmus+ Program allows young groups from various countries to gather and conduct short-term joint projects. In a youth exchange, you might anticipate participating in activities such as workshops, exercises, discussions, role-playing, outdoor activities, and more (EU Center for Education and Youth Programs, 2005). Students experiencing Erasmus+ tend to experience many other cultures, costumes, and lifestyles even after their first experience in a European country. Today, it is possible to talk about a similar Erasmus experience that goes beyond the experience of the country in which the students work and, in the lifestyle and student culture, connecting to and sharing daily life with students from other countries is part of the Erasmus experience (Dunkel & Teichler, 2006; Corbett, 2005). By utilizing such programs, students will likely find opportunities to learn about universities outside of Turkey and are encouraged to study and live in another country. Erasmus + seeks to establish what changes occurred in students' perspectives, their assessment of events, and their educational and professional outlook. This study aims to determine the satisfaction and views of university students experiencing at least an Exchange Program (Youth Pass, Mobility, Voluntary Service, etc.).

Literature Review

In Europe, the concern about the mobility of students in universities is increasing each passing day (Altbach & Teichler, 2001; Corbett, 2003; Papatsiba, 2006). In order to create a shared European consciousness, the Lisbon Strategy promotes mobility throughout Europe as the primary objective. The Bologna Declaration aims to increase mobility among students and lecturers in every part of Europe. The Berlin Conference also emphasized that mobility is one of the main features of creating the European Higher Education field and the importance of academic, cultural,

political, social, and economic aspects in forming one Europe (EU Center for Education and Youth Programs, 2005). European mobility practices in higher education started in 1987 with pilot projects. Since 1995, mobility in the form of student/faculty exchange programs has been given a structural framework with the Socrates-Erasmus Program and has continued to grow gradually. The Erasmus Program focuses on higher education. The program's goals are to promote the quality of higher education in Europe and strengthen the European aspect. In the Socrates program, the highest budget is devoted to the Erasmus program; the highest percentage of the Erasmus program is allocated to the exchange of students and lecturers. The total number of students attending mobility is predicted to reach 3 million by 2011 (European Union, 2005). EU Delegation to Turkey Cooperation Department Head Gatti: " Half a million Turkish citizens benefited from the Erasmus Plus program between 2004-2015, and Turkey is amongst the most benefited countries participating in this program." The National Agency Director of Turkey, Mesut Kamiloğlu, stated that "Turkey joined the Erasmus Plus program 14 years ago, 26 thousand projects and nine million Euros were allocated as a resource" (From Erasmus, 2017, November 7).

The Erasmus program promotes cooperation between universities, provides an exchange of students and educators across Europe, and aims at academic recognition of studies and degrees achieved in participating countries. The regulation and management of the program is under the control of the EU Commission. The European Commission makes financial contributions to change by granting unrequited grants to contribute to the additional costs of the individuals benefiting from the change abroad. The Erasmus student exchange program allows students to study in a university or higher education institution for 3-12 months. However, the time spent by the student in other countries and his academic studies is recognized by the university where he is registered in his country. For this purpose, the European Credit Transfer System (ECTS) was developed to solve the problems related to the recognition of the education received by various

higher education institutions and other education institutions in Europe and to support student mobility. Especially in recent years, the international mobility of students gaining qualifications at universities in Turkey, with European countries, establishing themselves as a target of the National Higher Education Policy (DPT, 2000).

It is very important to evaluate the expectation and satisfaction levels of the students who benefit from the Erasmus program utilizing objective tools and studies and to evaluate whether or not the Erasmus program has been reached. The results of the research on this subject, as well as the academic program, department, faculty, university, and country levels of the students, reveal their expectations and satisfaction levels, allowing a comparison of the quality, continuous monitoring, and review of the program. (Yağcı, E., et al. 2007) stated that the research at Hacettepe University indicated that most students going to Erasmus+ met their expectations regarding daily life, academic life, and support services. Executives in European universities conduct follow-up surveys to test student satisfaction levels (Figlewicz & Williams, 2005; Rekkedal & Qwist-Eriksen, 2003). Universities determine the satisfaction level of their students going to other countries. In addition, universities aim to develop the services offered to the students by determining their satisfaction level and the level of the students coming to their own. In the study of Papatsiba (2005) on the experience of 80 Erasmus students benefiting from the Erasmus program, he identified mobility makes it easier for students to cope with the challenges they meet in different environments, develop their own self-perceptions, increase self-confidence, take control of their lives, take risks, easily tolerated. Rathje (2007) states that interaction between countries builds linguistic and cultural acquaintances and ensures students are self-reliant and goal-oriented. According to Santos and Cunha (2018), the idea has evolved to include international communication, the promotion of student mobility, university collaboration, and the recognition of higher education certificates, which can all significantly contribute to realizing integration in education. In other words, being in different communities and cultures may change students'

perspectives positively (Arndt, 1984; Saliba, 1995). These programs make them more self-confident by providing a great educational and intercultural experience. A different study (Stronkhorst, 2005) stated that the level of student motivation and the quality of institutional support and service provided are two main factors in determining student achievements.

The goal of this study is to determine the satisfaction levels of the students going to study abroad through the Erasmus program from the University of Hakkari and returning to Turkey about the daily lives of students, their academic life and support services, and the suggestions of the students to the other students. According to this research, the university authorities can consider student satisfaction in their decisions about students. Information-based action can be taken to organize student services by providing data to the European Union office. The research findings can be shared with the students, and they can be provided with the ability to act realistically to determine their preferences and expectations. The research results on this subject, academic program, department, faculty, university, and country levels of the students reveal their expectations and satisfaction levels, allowing a comparison of the quality, continuous monitoring, and review of the program.

Research Question

In this study, the responses to the following questions were investigated:

1. What are the satisfaction levels of university students attending Erasmus+ Program?

2. What are the views of university students attending Erasmus+ Program?

3. What are their recommendations to stakeholders?

METHODOLOGY

Research Design

This mixed-method study aims to obtain the views of university students who have been abroad as Erasmus students via a survey and an open-ended question. According to Creswell (2014), mixed-methods research incorporates aspects of both qualitative and quantitative research to answer the research topic

Participants

The universe of this study is 26 students between 18-30 years of age at Hakkari University who are going abroad as Erasmus students and returning in the 2014-2024 academic year. Everyone who participated in the study did so for educational purposes. The study sample is 26 students who were reached with the "convenience sampling method "from non-probability sampling types. In addition, 10 were associate students, 12 were undergraduates, and four were graduate students. Due to time limitations, the sample was selected from easily accessible and practicable types. Convenience sampling is a method that accelerates research because, in this method, the researcher chooses a situation that is close and easy to access (Kılıç, 2013).

Table 1. Descriptive Statistics of the Participants

Female	Male	Total	
N	%	n	%
18	69	8	31

As Table 1 shows, this study had 18 (69%) female participants and 8 (31%) male participants ----------

Data Instruments and Procedure

The University of Hakkari External Relations Unit and Erasmus Coordinator ship Unit developed the questionnaire used in this study. The coordinator ship applies this questionnaire to determine the satisfaction of students going abroad within the scope of Erasmus+ to manage the process better. The researchers utilized this questionnaire to conduct a scientific study in this direction. The questionnaire consists of 30 multiple-choice questions and an open-ended question. Before starting the study, the researcher held an online meeting with the students participating in the Erasmus+ program and provided necessary information about the implementation process. The participants voluntarily participated in the study. Google forms created by the researcher were shared with the participants online, and they were allowed to do so. The students were informed that the questionnaire results would be shared with the European Union (EU) Office of the Hakkari University to allow a comparison of the quality, continuous monitoring, and review of the program, and students were informed about the application of the questionnaire.

Data Analysis

The frequency and percentage distributions of the responses to the survey items were obtained. The following path was followed in determining the students' satisfaction level and in the questionnaire's evaluation. The variation between the level of satisfaction and expectation was identified to assess the level of satisfaction with each item. The difference was determined, and the difference was assessed based on satisfaction level. In other words, the student's rating for his / her satisfaction with his / her level of satisfaction with an item was removed, and the variation was accepted as the level of satisfaction. The difference points for satisfaction vary between (-4) and (+4). The nine degrees in this range were divided into three interval values and converted to verbal expression, as in Table 2. In addition, the open-ended

question was analyzed, divided into themes and subthemes, and categorized under five sub-themes as in Table 23**.**

FINDINGS

Table 2. Primary motivations for studying abroad

	F		%
Experience different learning contents/curricula	12		46
Developing social skills such as adaptability, problem-solving, curiosity	6		23
To learn/develop a foreign language		8	31
TOTAL	26		100

Table 2 shows that 46% of the participants' main motivation for studying abroad was to experience different learning contents /curricula. In addition, 31% of the participants aim to learn or develop a foreign language, and 23% aim to develop social skills such as adaptability, problem-solving, and curiosity**.**

Table 3. Criteria for choosing the university

	F	%
Education quality, Reputation/rankings	14	54
Feedback from Erasmus+ graduates	4	15.3
Foreign Language, Country	8	30.7
Total	26	100

As it is observed in Table 3, while 54% of the participants choose to go abroad because of the quality of education, reputation and rankings of the university; 30.7% of the participants' criteria was the foreign language and country and 15.3% of them choose these countries with regard to feedback they received from Erasmus+ graduates**.**

Table 4. Students' thoughts related to the education they received with the Erasmus+ program

	Yes	No	Neutral	Total
F	20	2	4	26
%	77	7	16	100

Table 4 shows that while 77% of participants believe that they received a good education, 16% of them were neutral, and 7% percent of them thought that they did not receive a good education with the Erasmus+ program

Table 5. The Erasmus+ program contributes positively to their personal development

	Yes	No	Neutral	Total
F	26	0	0	26
%	100	0	0	100

Table 5 shows that all the participants (100%) thought that the Erasmus+ program contributed positively to their personal development**.**

Table 6. Their happiness to be in another country

	Yes	No	Neutral	Total
F	26	0	0	26
%	100	0	0	100

Table 5 shows that each study participant claimed they were happy to be in another country.

Table 7. Their feelings to have the opportunity to get to know new cultures

	Yes	No	Neutral	Total
F	26	0	0	26
%	100	0	0	100

Table 7 shows that all of the participants felt lucky to have the opportunity to learn about new cultures.

Table 8. Their thoughts of being in a foreign country

	Yes	No	Neutral	Total
F	26	0	0	26
%	100	0	0	100

Table 8 shows that 100% of the participants thought being in a foreign country was a positive experience**.**

Table 9. Participants' thoughts on having the opportunity to be together with students from different cultures

	Yes	No	Neutral	Total
F	26	0	0	26
%	100	0	0	100

As illustrated in Table 9, each of the participants in this study felt lucky to be together with students from different

cultures.

Table 10. Participants' thoughts on the Erasmus+ program in making a new circle of friends

	Yes	No	Neutral	Total
F	26	0	0	26
%	100	0	0	100

Table 10 shows that all the participants in this study believed that participating in the Erasmus+ program helped them make a new circle of friends**.**

Table 11. The Erasmus+ program's effect on improving participants' sense of responsibility

	Yes	No	Neutral	Total
F	26	0	0	26
%	100	0	0	100

In table 11, it is clear that every participant in this study thought that Erasmus+ program has improved their sense of responsibility.

Table 12. Participants' beliefs of the Erasmus+ program in improving their foreign language skills

	Yes	No	Neutral	Total
F	22	0	4	26
%	85	0	15	100

Table 12 shows that 85% of students believed the Erasmus+ program has improved their foreign language skills**.**

Table 13. The Erasmus+ program impact on participants' future career plans

	Yes	No	Neutral	Total
F	20	0	6	26
%	77	0	23	100

As Table 13 shows, 77% of the students thought the Erasmus program had impacted their future career plans.

Table 14. Participants' thoughts of the Erasmus+ program as a special experience

	Yes	No	Neutral	Total
F	26	0	0	26
%	100	0	0	100

Table 14 illustrates that every study participant believed the Erasmus program to add a unique experience to their CVs.

Table 15. The participants' adaptation to the university they attended

	Yes	No	Neutral	Total
F	9	11	6	26
%	35	42	23	100

As observed in Table 15, while 35% of students stated they had difficulties adapting to the university they attended, 42% identified no challenges, and 23% were neutral about this issue.

Table 16. The participants' satisfaction with the approach of the lecturers

	Yes	No	Neutral	Total
F	26	0	0	26
%	100	0	0	100

Table 16 shows that all of the participants in this study declared they were satisfied with the lecturers' approach at the university they attended in the Erasmus+ program.

Table 17. The participants assess the physical conditions of the training areas, accommodation, transportation facilities, internet, and online

	Very Good	Good	Neutral/Bad	Total
F	12	8	6	26
%	46	31	23	100

services

Table 17 shows that while 46% of the students in this study assessed the physical conditions of the training areas, accommodations, transportation facilities, internet, and online services in the Erasmus+ program as "very good," 31% declared these issues as "good," and 23% declared them as "neutral/bad."

	Yes	No	Sometimes	Total
F	4	14	8	26
%	15	54	31	100

Table 18. Participants' ideas of financial difficulties

As shown in Table 18, 54% of the students claimed that they did not have financial problems. On the other hand, 31% of students mentioned they sometimes had financial problems, and 15% claimed they had financial difficulties in Erasmus+ programs.

Table 19. The participants' ideas about general expenses related to their mobility period

	0-25%	26-50%	51-75%	76-100%
F	3	10	9	4
%	12	38	35	15

As regarded in Table 19, while 38% of students remarked that the Erasmus+ programs met 26-50% of their general expenses, 35% of them stated that it met 51-75%, 15% of them 76-100% and 12% of them 0-25%.

Table 20. The problems participants experienced in the country they have been to. (More than one option can be marked)

	F	%
Economic problems	10	39
Foreign Language	5	19
Food and drink	6	23
Climate conditions, Cultural differences	5	19
Total	26	100

Table 20 shows that 39% of the students remarked that they had economic problems in the Erasmus+ programs. In addition, 23% stated they had food and drink problems, 19% said they had foreign language problems, and 19% said they had problems with climate conditions and cultural differences.

Table 21. Participants' satisfaction levels with their Erasmus+ mobility experience?

	Very Satisfied	Satisfied	Not Satisfied	Total
F	14	10	2	26
%	54	38	8	100

As observed in Table 21, 54% of students stated they were very satisfied, 38% were satisfied, and 8% were unsatisfied with their Erasmus+ mobility experience.

Table 22. Participant's recommendations this experience to other students

	Yes	No	Neutral	Total
F	26	0	0	26
%	100	0	0	100

Table 22 illustrates that all the students participating in the Erasmus+ program recommended this experience to other students.

Table 23. Participant's recommendations and comments for the sender and host higher education institutions

	F	%
Students Cultural Adjustment Process	20	76
Academic Support and Counseling	22	84
Cultural Interaction and Language Learning	18	69
Safety and Health Services	15	57
Cultural and Social Support		
		69
	18	

In Table 23, most students involved in the Erasmus+ program recommended that higher education institutions offer support in cultural adaptation, academic counseling, cultural interaction, language training, security, health assurance, and social support.

RESULTS, CONCLUSIONS AND DISCUSSIONS

This study aimed to find out the satisfaction and views of university students towards the Erasmus+ program attending to this program in advance. Based on the opinions of the students who participated in the Erasmus+ Program, it is understood that all of the students who participated in the program experienced different cultures and improved their foreign languages, which is in line with Adanır and Susam (2019). One of the biggest reasons the students express is to improve their language skills, which is in line with (Endes, 2015; Bağcı et al., 2018). Therefore, it can be said that students want to participate in the program significantly to improve in practical terms, in line with Bakioğlu and Certel (2010). It was found that most of the participants' primary motivation for studying abroad was to experience different learning contents /curricula, to learn or develop a foreign language, and to develop social skills such as adaptability, problem-solving, and curiosity parallel (Demir &Demir, 2009; De Wit, 2017). The study's findings unveiled that the Erasmus+ program offers students a highly qualified education, fosters personal growth positively, instills a sense of satisfaction in their involvement within a foreign country and culture and leads to a favorable experience of being in diverse international settings. These results are in line with (Göksu, 2011; Bağcı et al., 2018; Mede & Tüzün, 2016).

The study's findings indicate that the Erasmus+ program facilitated opportunities for students to gain exposure to diverse cultures (Teichler, 2004; Santos & Cunha, 2018) and engage with individuals from various backgrounds. The fact that all of the students in our study recognized different cultures and people as an outcome is included in many studies in the literature. Their studies (Altay, 2016; Kohn, 2015; Papatsiba, 2005; Urquía-Grande & Sancak, 2009; Ünal, 2016) found that the program provided students with the opportunity to encounter different cultures and that students were able to view events in different dimensions.

Furthermore, it was ascertained that this program augmented students' sense of accountability, enhanced their linguistic proficiency (Okur, 2016; Sarıtaş, 2011; Altay, 2016), shaped their prospective vocational aspirations, and afforded them a unique experiential opportunity. As previously indicated, students primarily emphasize the cultural aspect of the program. However, it can be observed that approximately half of the students also place importance on the academic dimension of the program. From this perspective, a significant proportion of the student population actively engaged in the program with the primary objectives of exploring diverse educational systems and visiting novel destinations, particularly within the European continent, which aligns with (Şahin, 2007).

It can be argued that students engaged in the program to foster interpersonal connections, conduct comparative analyses of educational systems, acquire knowledge about the European Union, enhance their professional competencies, explore possibilities for relocation to Europe, examine student-faculty dynamics, and explore prospects for postgraduate studies as in line with (Adanır & Susam, 2019). This study additionally discovered that most university students who participated in the Erasmus+ program encountered various challenges. The primary challenges encompass economic hardships (Kohn, 2015; Bağcı et al., 2018), linguistic barriers (Dinçer et al., 2017), climate conditions, cultural differences (Pavlina, 2021; Onağ et al., 2022; Göksel, 2022), and issues of food and nourishment. The findings indicate that the students who participated in the Erasmus+ program expressed overall satisfaction with the quality of instruction provided by the instructors at the universities in which they were involved. Furthermore, it was found that students had no difficulties with education, accommodation, transportation services, and internet connectivity in line with (Pavlina, 2021; Guan, 2021; Hanson et al., 2019).

The students listed additional information, observations, comments, or advice from the participating students that may be useful for students wishing to go abroad to participate in Erasmus+ student mobility and for sending and receiving higher education institutions. They recommended

that these higher institutions provide information about the local culture, traditions, lifestyle, and language in advance and support in dealing with possible difficulties they may encounter in the host country. In addition, it emphasized the need to provide academic support and counseling. Furthermore, it was indicated that the Erasmus+ students recommended that host universities organize events to encourage cultural interaction among students and offer programs to support language learning. Eventually, it was also emphasized that host universities should provide students with the necessary information on health care, insurance, and emergencies and take measures to keep them safe, encourage students to participate in social activities and integrate them into the local community. Based on the feedback from the students, they believe that both sending and receiving institutions should implement corrective actions in different areas. Hence, it is evident that the institutions capable of overseeing and governing the Erasmus+ program should consider these student recommendations.

One of the outcomes of this study is that the wages provided to students participating in the Erasmus+ program are insufficient to cover their overall expenses. However, the students were generally highly satisfied with the Erasmus+ program and expressed strong recommendations to their peers and the sending and hosting institutions.

RECOMMENDATIONS AND LIMITATIONS

The current study has a few limitations. The sample group is 26 students at Hakkari University. The small number of students in the current sample is a limitation. An example of different universities with many students may increase the credibility of the result so that the generalization of results can be more comprehensive. Therefore, more research on this subject should be investigated. The results of this study may be helpful for ESL students who have prejudices but do not have enough courage to go abroad and plan their future careers. It is recommended that policymakers and university educators demonstrate thoroughness and care by considering the results of

this study when facilitating student involvement in the Erasmus+ program. Additionally, they should ensure that students receive sufficient information before participating in the program.

As a result of the study, it was revealed that students had economic problems, problems of adaptation to different cultures, and difficulties with foreign languages. In this direction, it is suggested that universities should improve these skills by taking students to foreign language courses, organizing courses or activities to introduce different cultures, and taking necessary initiatives to improve the fees paid within the scope of the Erasmus+ program.

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CHAPTER 7

INTELLECTUAL DISABILITY THROUGH HISTORY: FROM ANCIENT PREJUDICE TO MODERN SUPPORT

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INTRODUCTION

The most recent definition of intellectual disability, according to the American Association on Intellectual and Developmental Disabilities (AAIDD, 2021), reads: "Intellectual disability is a condition characterized by significant limitations in intellectual functioning and adaptive behavior that appear before the age of 22". General mental ability, such as learning, thinking, and problem solving, refers to intellectual functioning. One way to measure intellectual functioning is the IQ test, with a score around 70 or up to 75 indicating significant limitations. Adaptive behavior encompasses the acquisition and application of cognitive, social, and functional abilities in daily situations. This involves developing language and literacy, understanding money, time, and numbers, and self-awareness. Interpersonal relationships, social duties, self-worth, and problem-solving skills are part of social adaptation. Practical adaptation involves performing activities essential for daily life, including personal hygiene, work-related tasks, healthcare, and ensuring safety during travel. Standardized tests can be used to assess limitations in adaptive behavior. This condition begins during the developmental period, defined as before 22 years, and is part of the group of conditions known as developmental disabilities and is one of the most common developmental disabilities in the world (Cleveland Clinic, 2023).

Intellectual disability is not a phenomenon of modern times, nor is it a result of the complex demands of modern education systems or environmental pollution, which has become particularly pronounced in the 20th century. In fact, intellectual disability has deep roots and has been present among people since the earliest times of human civilization (Chichevska Jovanova, 2018).

Ancient times and the Middle Ages

Historical records show that people with intellectual disabilities have also existed in ancient societies and cultures, where their treatment has depended on the customs and beliefs of a particular culture. The earliest evidence of intellectual disability dates back to 1552 BC, recorded in the

Thebes (Luxor), Egypt therapeutic papyrus, indicating a long history of the condition (Ainsworth & Baker, 2004).

In Ancient Greece, the treatment and life of people with intellectual disabilities have varied according to time and place, but it is generally considered that they have not been accepted in society as they are today. Intellectual disability has often been a subject to different attitudes and treatment, which has differed from city-state to city-state. For example, in the city-state of Sparta, newborns have been examined by the City Council of the Elders, and if the child has been found to have a "defect", it has been killed, or left in the wild to die (Switzer, 2003). In Athens, attitudes may have been less harsh than in Sparta, but still, people with intellectual disabilities have not been accepted as full members of society. They have often been the subject of ridicule and prejudice (Gleason, 1998).

Plato and Aristotle, the two most influential philosophers in ancient Greece, had different views on people with intellectual disabilities. Plato in his works, such as The Republic, has mentioned that people with severe physical and mental disabilities should not be part of the ideal state. Aristotle, on the other hand, in his "Politics" has indicated that children with serious disabilities should be left to die, which reflects the cruel attitudes of the time.

Hippocrates, known as the "father of medicine", has believed that mental disabilities are the result of natural causes, such as imbalances in body fluids. This has been an important step towards a medical view of disability, although the treatments have been primitive by modern standards (Blackhurst, 2005).

In the 2nd century AD, in the Roman Empire, disabled people, including children, have been often sold as slaves. They have been considered less valuable and used for specific tasks or even for the entertainment of wealthy Romans. This has included gladiator fights, animal fights, and other forms of cruel entertainment that has highlighted their physical shortcomings. Philosophers such as Seneca has supported the view that deformities and disabilities are a natural flaw that should be ignored or eradicated. In the Middle Ages (5th to 15th centuries), the treatment of people with intellectual disabilities has changed according to the religious and cultural attitudes of the

time. More humane techniques have emerged (e.g. reducing infanticide and opening "orphanages"), but even so, the status and care of people with disabilities has differed in many respects. Society then often has been viewed these individuals through the lens of religious beliefs, believing that their condition has been the result of divine punishment or demonic possession. As a result, many people with intellectual disabilities have undergone religious rituals and prayers as a way of healing (Hsy, Pearman, & Eyler, 2022).

However, some religious institutions have showed compassion and have provided care for people with intellectual disabilities in monasteries and religious institutions. Monasteries have been among the first institutions that have begun to care for the sick and poor, including people with intellectual disabilities (Metzler, 2016). They have been often treated with compassion and care, even though their condition has not been well understood.

In the communities, people with intellectual disabilities have often remained supported by their families and the local community. In some cases, they have been involved in various activities such as farm work or performing simple tasks, if possible (Eyler, 2022). For example, in rural communities, people with intellectual disabilities have been often engaged in agricultural work or performing basic tasks to contribute to their families.

However, not all treatment has been humane. People with intellectual disabilities have sometimes been marginalized or abused. In some royal courts, these individuals have been used as “court jesters” for entertainment, exposing them to humiliation and exploitation (Hsy, Pearman, & Eyler, 2022).

Picture 1. Henry II of England

In the early 12th century, Henry II of England has introduced a law that placed people with intellectual disabilities under the protection of the state. This meant that they have been supported and protected by the king, in order to ensure their safety and basic care. This step has been important in recognizing the need for systematic care for people with intellectual disabilities and has laid the foundation for further legal and social reforms regarding their protection (Harris, 2006).

In 1690, John Locke has published his influential book, An Account of Human Reason, in which he has presented the theory that the infant's mind is a blank slate (tabula rasa). According to this theory, all knowledge and ideas have come from experience and perception. This concept has significantly influenced the education and care of people with intellectual disabilities, as it has suggested that with appropriate education and a stimulating environment, they could develop and thrive. Locke has been the first to distinguish between intellectual disability and mental illness, which has been key to the understanding and treatment of these conditions in the future (Spreat, 2017).

19th century

Picture 2. Jean Itard (19th Century painting)

The work of Dr. Jean-Marc Gaspard Itard has been the key to the development of treatment for people with intellectual disabilities. In 1800, Itard has been called to work with a wild child from Aveyron called Victor, who had spent much of his life in a forest in the south of France. Victor has been found at the age of about 12 and placed at the National Institute for the Deaf and Dumb in Paris, where Itard has begun to work with him.

Itard has believed that humans differed from animals in the capacity for empathy and language, and so his goals has been to civilize Victor by teaching him speech and expression of human emotions. Based on the theories of Locke and Condillac, Itard has developed a curriculum that has been focused on the development of Victor's senses, intellect, and emotions. This program has included five main goals: to interest him in social life, to improve his awareness of external stimuli, to expand the range of his ideas, to teach him to speak and to teach him to communicate through symbols (New World Encyclopedia, 2023).

Despite the initial success, Victor has shown significant difficulties in further learning speech. Itard has been able to teach him basic words like "milk" and "Oh my God" but has failed to teach him more complex verbal communication. However, Victor has shown signs of empathy, which Itard has considered as a significant advance. One such moment has been when Victor has comforted Itard's housekeeper who has been crying after the loss of her husband (Harvard University Press, 2023).

Although Itard has not succeed in completely teaching Victor to speak, his work has laid the foundation for the further development of special education and has made him one of the founders of this field. His methods and approaches continue to influence contemporary understanding and treatment of people with intellectual disabilities (New World Encyclopedia, 2023).

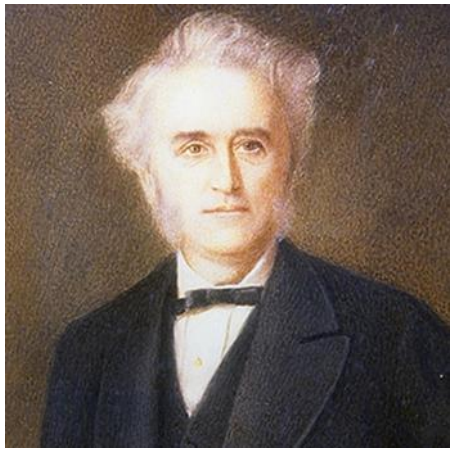
Picture 3. Edouard Seguin

Edouard Séguin, has been originally taught by Jean-Marc Gaspard Itard, dedicated himself to working with children with intellectually disability at the Home for the Incurables in France. In 1839, he has founded the first private school in Paris dedicated to the education of children with intellectual disabilities. By the middle of the 19th century, Séguin had developed a comprehensive approach to their education, known as the physiological method, which has been based on the idea that intellectual disability is the result of disturbances in the central nervous system and that strengthening the nervous system could improve the cognitive abilities of people with intellectual disabilities (Britannica, 2023).

Seguin has incorporated sensory education in his physiological approach, encompassing sight, hearing, smell, taste, and hand-eye coordination. The program has evolved to encompass the enhancement of fundamental self-care abilities and focused education highlighting perception, imitation, positive reinforcement, memory, coordination, and generalization.

In 1850, Seguin has moved to the United States, where he has become a prominent promoter of education for the children with intellectual disability. There he has continued to develop and apply his physiological method in various institutions. In 1866 he has published the book "Idiocy: And Its Treatment by the Physiological Method", which has described the methods used in his schools. Seguin's programs have emphasized the importance of developing autonomy and independence among people with intellectual disabilities through a combination of physical and intellectual tasks (Museum of disability history, 2023).

In 1876, Seguin has founded the Association of Medical Officers of American Institutions for Idiots and Feeble-Minded Persons, which later has become the American Association for Mental Retardation (AAMR), today known as the American Association for Intellectual and Developmental Retardation (AAIP). Many of Seguin's modified techniques are still used today in the education and care of people with intellectual disabilities (Eric, 1964).



Picture 4. Portrait of John Langdon Down (c. 1870) by Sydney Hodges

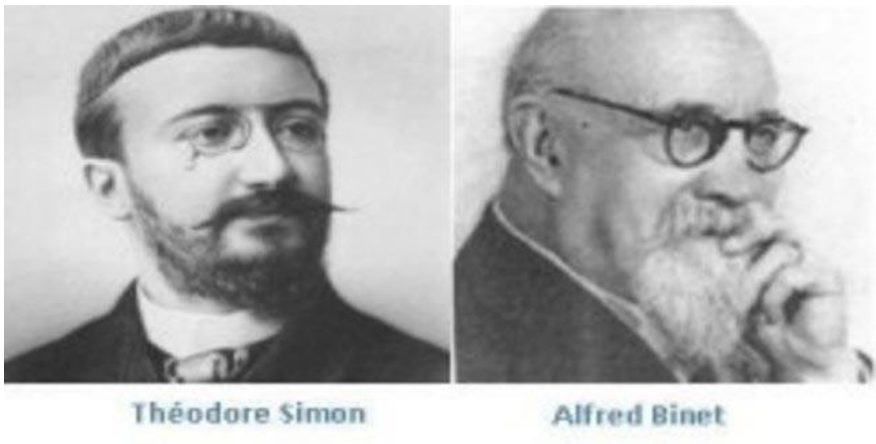
In 1866, John L. Down, a British physician, has published his influential study, Observations on an Ethnic Classification of Idiots, in which he has been the first person to describe the physical characteristics of what would later become known as Down syndrome. This paper, that has been

published in the London Hospital Report, represents a significant milestone in the medical science of intellectual disability. Down has classified people with intellectual disabilities according to ethnic standards and has singled out a group he called the "Mongoloid type of idiocy". He has described patients with flat and broad faces, slanted eyes, small noses, and thick, rough skin that has appeared to be too large for the body. These individuals have exhibited both poor coordination and a weak circulatory system, tending to worsen in the winter months. According to Down, they have been congenital idiots, and he has attributed the cause of their condition to degeneration caused by tuberculosis in the parents (Neonatology.net, 2023; Intellectual Disability and Health, 2023).

Down has come to the conclusion that the causes of intellectual disability can be divided into three groups: congenital, developmental and accidental. This classification has helped to focus attention on the specific conditions that can manifest as intellectual disability. Although advances in diagnosis have not been accompanied by equally significant advances in treatment, his work has laid the foundation for further research and development of medical and educational methods for these individuals (Down-Syndrome.org, 2023).

Although the terms "Mongoloid type" and "idiocy" are considered archaic and offensive in the modern context, Down's work has been crucial for a better understanding of intellectual disabilities and for the development of the modern concept of Down syndrome. This work has drawn the attention of the medical community to the need for systematic treatment and support for people with intellectual disabilities (Intellectual Disability and Health, 2023).

20th Century

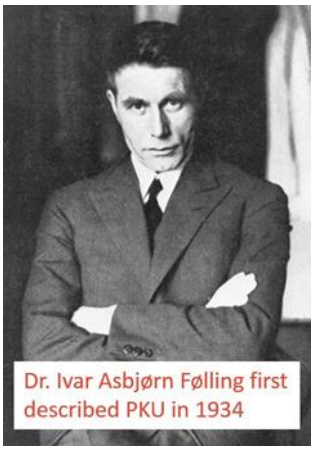


Picture 5. Theodore Simon and Alfred Binet

French psychologists Alfred Binet and Theodore Simon have developed the first intelligence tests (IQ tests) in 1905 to assess children's intelligence and determine which children needed special education (Fancher, 1985). These tests, known as the Binet-Simon scale, have been the first widely used intelligence tests that focused on mental abilities such as memory, attention, and problem solving, rather than academic knowledge (Verywell Mind, 2023; UW News, 2013). With the advent of these tests, mass testing of people of all ages has begun, including children from the general population, marginalized groups, and prisoners. These tests have made it possible to identify children who needed special education, but also has led to the association of mild intellectual disability with psychopathy and criminal behavior in the opinions of many prominent figures, such as Henry Goddard (University of Toronto, 2023).

Henry Goddard in his book "The Kallikak Family: A Study in the Heredity of Feeble-Mindedness" published in 1912 has suggested that intellectual disability and antisocial behavior are hereditary, he has also emphasized the link between intellectual disability and crime. This has led to the view that people with intellectual disabilities are a danger to society because of “free sexual intercourse” and the possibility of creating impaired offspring (Verywell Mind, 2023; UW News, 2013). These attitudes have fueled

the eugenics movement, which have sought to protect society through the institutionalization and sterilization of people with intellectual disabilities. These practices have continued until the middle of the 20th century, in order to prevent the inheritance of such conditions (University of Toronto, 2023).



Picture 6. Ivar Asbjorn Folling

In 1934, Norwegian biochemist and physician Ivar Asbjorn Folling has discovered that the metabolic disorder phenylketonuria (PKU) has been associated with intellectual disability. He has noted that this condition could be identified by the presence of phenylpyruvic acid in the patients' urine. Folling's discovery has led to the development of a dietary therapy that could prevent intellectual disability in infants and young children with PKU by regulating dietary phenylalanine levels (Science History Institute, 2023; MDPI, 2020). Accordingly, medical science has again become interested in discovering the biological causes of intellectual disability and in discovering effective treatment. In 1961, Robert Guthrie has developed the first newborn screening test for PKU, which has enabled early detection and intervention. This test has become a standard part of neonatal screening programs in many countries, significantly reducing the incidence of intellectual disability caused by PKU (Human Genomics, 2023).

In the 1920s and 1930s, Lev Vygotsky has conducted special education research, working with children with intellectual disabilities to explore the developmental interaction between children and their cultural environment (Rieber RV & Carton AS, 1993; van der Veer R & Valsiner J, 1991). Vygotsky,

known for his theory of social constructivism, has been focused on how cultural and social factors influence the development of intellectual abilities (Rieber RV & Carton AS, 1993). His research has found that children with intellectual disabilities can develop skills and knowledge through interaction with their environment and support from others (Rieber RV & Carton AS, 1993).

In 1935, Edgar Dole has developed the Vineland Social Maturity Scale, an important tool for assessing everyday skills and adaptive behavior in people with intellectual disabilities. This scale has enabled a better identification and understanding of the needs of these persons and their ability to adapt in society (Hodapp RM, 1998).

In the 1940s, Barbara Inhelder and Jean Piaget have studied children with intellectual disabilities to determine whether Piaget's stages of cognitive development have followed a universal, constant, and unchanging order (Inhelder B, 1943/1968; Piaget J & Inhelder B, 1947). Although intellectual disability has not been the focus of their research, Piaget and Inhelder have recognized that their theories could be applied to these children, providing a basis for understanding their cognitive development (Hodapp RM, 1998).

At the same time, Heinz Werner studied children with intellectual disabilities in order to formulate his orthogenetic principle, which suggests that developmental processes progress from a phase of overall undifferentiated functioning to a stage of differentiation, articulation, and hierarchical integration. (Werner H, 1938, 1941; 1957) . Werner's research has shown that development in children with intellectual disabilities can be different, but still follows certain patterns of development and integration of different abilities (Hodapp RM, 1998).

Although intellectual disability has not been at the center of these theorists' research, each have recognized that their theories could be applied, extended, and examined among children with intellectual disabilities (Hodapp RM, 1998). At that time, intellectual disability has been less researched and treated as a subtopic in developmental psychology, psychiatry, and clinical psychology (King BH, State MW, Shah B, Davanzo P & Dykens E, 1997; Routh DK, 2003).

The situation has started to change for two main reasons. Initially, there is a growing shift in research focus from studying children with intellectual disabilities to studying those with various types of intellectual disabilities. Unlike earlier times, there are now numerous studies available on children with Down syndrome, Williams syndrome, Fragile X syndrome, Prader-Willi syndrome, and several other well-known syndromes caused by genetic disorders. These studies have facilitated numerous new findings about these disorders. For example, certain genetic syndromes have shown an individual association with etiology, with cognitive or speech ability or weakness. Others have shown causally related patterns of development in different domains, and still others have even higher rates of individual behaviors or associated mental states. Thus, intellectual disability caused by different genetic disorders reveals different patterns of development and needs in children, allowing researchers and practitioners to better understand and support these individuals in their development (Dykens EM & Hodapp RM, 2001).

During World War II, the Nazis have experimented on people with intellectual disabilities in a way that reflected their brutal and inhumane approach to anyone who did not conform to the Nazi image of a superior race. These experiments have been part of a larger program of eugenic practices, which has included the sterilization and euthanasia of people deemed "undesirable". People with intellectual disabilities have been often subjected to inhumane medical experiments, involving painful and dangerous procedures, without their consent. Examples of these experiments can be found in the work of Nazi physician Josef Mengele, who has performed experiments on twins, including those with intellectual disabilities, to investigate genetic factors influencing intellectual development (Lifton, R. J., 1986).

Important Family Associations for People with Intellectual Disabilities

After the World War II, families and organizations have started significant initiatives to support people with intellectual disabilities, which has led to the formation of influential organizations that have played a key role in improving the quality of life of these people. In the 1950s, individual family groups have begun an initiative to organize research in the field of intellectual

disability. Thus appeared the National Association for Retarded Children (NARC), established in the USA in 1950 (Scheerenberger, 1983). NARC members have exerted strong pressure at a meeting of national experts, organized at the request of President John F. Kennedy, to study methods of prevention and treatment of mental illness and intellectual disability (Gleason, 1998). In 1963, President Kennedy has asked the Congress to adopt a national program to combat intellectual disability, which has represented a significant step forward in the history of this field (Switzer, 2003). The program has allowed specialists from biology, psychology and education to focus for the first time on the study of intellectual disability and ways of its prevention and treatment in the United States (Cohen & Heller, 2010). President Kennedy has showed great interest in this field due to personal experiences in his family, as his sister, Rosemary Kennedy, born with an intellectual disability, has underwent an unsuccessful lobotomy that has worsened her condition. This traumatic experience has motivated Kennedy to raise public awareness and advocate for improved conditions and treatment for people with intellectual disabilities, resulting in significant policy initiatives and programs during his tenure.

Effective medications for treating mental illness have first become available in the mid-1950s and early 1960s. They soon have found widespread use among people in residential care, sometimes as extremely effective nonbiological interventions. Unfortunately, drugs have been often overused and side effects have not been recognized.

In the 1970s, families have begun to demand "chemical restraint" and the more frequent use of educational activities and behavior-oriented procedures that would meet the needs of people with more severe forms of intellectual disability. Their concerns have been finally addressed by federal and state law, but there have been still extreme opinions.

In the following, we will list the most significant organizations that are dedicated to supporting people with intellectual disabilities:

National Association for Retarded Children (NARC)

Founded in 1950 in the United States, this organization, later renamed as The ARC, has been formed by parents of children with intellectual

disabilities. The ARC is committed to advocacy, support and development of services for people with intellectual and developmental disabilities. They work at the local, state and national levels to ensure a fair and inclusive social environment.

Mencap (The Royal Mencap Society)

Founded in 1946 in Great Britain by a group of parents of children with intellectual disabilities. Mencap stands for support, advocacy and campaigns to improve the quality of life of these people. The organization promotes inclusion and equal opportunities for people with intellectual disabilities and works at local, national and international levels.

L'Arche

L'Arche comprises communities worldwide where individuals with and without intellectual disabilities coexist and collaborate in both residential and professional capacities. Founded in 1964 by Jean Vanier in France, L'Arche promotes integration and mutual support, creating an environment where all members can grow and develop together. The organization has communities around the world and focuses on building relationships and inclusion.

Special Olympics

Founded in 1968 by Eunice Kennedy Shriver, Special Olympics provides sports training and athletic competition for children and adults with intellectual disabilities. This organization uses sport as a means to promote physical and mental health and to raise the self-esteem and social integration of people with intellectual disabilities. Special Olympics has been founded by a family member with personal experiences with intellectual disability (Special Olympics, 2024).

Inclusion Europe

Founded in 1988, Inclusion Europe is a Pan-European federation that advocates for the rights and integration of people with intellectual disabilities and their families. They work to promote inclusive policies and practices in all aspects of social life, from education and employment to health care and social

services. Although not explicitly founded by parents, the organization has strong support from families (Inclusion Europe, 2024).

Autism-Europe

Founded in 1983, Autism-Europe is an international organization working to promote the rights and well-being of people with autism and intellectual disabilities. They actively cooperate with parents and families of people with autism, advocating for the improvement of living conditions and education, as well as for greater awareness and understanding of autism in society. Although not explicitly founded by parents, the organization actively collaborates with parents and families of people with autism (Autism-Europe, 2024).

These organizations play a key role in supporting people with intellectual disabilities and their families, providing resources, advocacy and services that enable these people to live full and independent lives.

Historical development of the education of children with intellectual disabilities: from institutionalization to normalization and total inclusion

During the late 19th and early 20th centuries, institutional education has become an increasingly common form of education for students with intellectual disabilities. During this period, there has been a belief that with proper education, people with intellectual disabilities could be "cured" or significantly improved. This belief has encouraged the development of special institutions where these students have been housed and educated according to special programs that has included academic and life skills. Institutions have been often isolated from society in order to provide a special environment for the education and development of students (Trent, 1994). However, over time this approach has been found to have significant drawbacks, such as social isolation and lack of community integration.

Over time, society's attitudes towards people with disabilities has begun to change. Society began to see these people as active and valuable members, rather than passive recipients of services. This has led to increased support for inclusive practices in education and other fields (Gartner & Lipsky, 1987).

The idea of normalization has appeared in the 1940s in the Scandinavian countries, especially in Sweden and Denmark. The principle of normalization, formulated by Bengt Nirje, has implied the provision of living conditions for persons with disabilities that are as close as possible to those of other members of society (Nirje, 1969). This principle advocates that people with intellectual disabilities have access to the same services and activities as others, including education, health care, and social life (Wolfensberger, 1972).

During the 1950s and 1960s, many countries have begun opening special schools to meet the needs of children with intellectual disabilities. These schools have provided specialized support and education, but over time it became apparent that this separation has contributed to the social isolation of children (Guralnick, 2001). This has led to a change in attitudes and prompted demands for the integration of children with disabilities in regular schools. The goal has been to enable these children to learn and grow together with their peers without disabilities (Kavale & Forness, 2000).

In the 1970s, research has showed that placing students with intellectual disabilities in special schools did not solve their educational difficulties and did not "cure" the intellectual disability. As a result, many students have been moved back into society, and the educational focus has shifted from special schools to special education groups in local schools. This approach has supported the inclusion of children with disabilities in regular schools with specialized support (Stainback & Stainback, 1996).

In 1975, the passage of the Education for All Handicapped Children Act has been a landmark event that required schools to provide education in the least restrictive environment. This law has been instrumental in promoting inclusive education, as it has mandated that children with disabilities should be educated alongside their peers whenever possible (Yell, Rogers, & Lodge, 1998).

In 1994, a World Conference on special needs in education has been held in Salamanca, Spain, attended by representatives of 92 governments and 25 international organizations. The result of this conference has been the Salamanca Declaration, which highlights the importance of inclusive education and calls on all governments to adopt it as legal policy. According

to the Salamanca Declaration, children with special educational needs should have access to mainstream schools and be placed in child-centered educational institutions that meet their needs (UNESCO, 1994).

In December 2006, at the 61st session of the United Nations General Assembly, the Convention on the Rights of Persons with Disabilities has been ratified, which includes significant commitments to inclusive education. Although countries are making progress towards embracing an inclusive philosophy, there are still significant obstacles to its full implementation.

Conclusion

The history of intellectual disability is long and complex, from ancient prejudice to modern support. In ancient times, people with intellectual disabilities have often been marginalized or treated cruelly, such as in Sparta where newborns with "defects" have been killed, or in the Roman Empire, where people with disabilities have been used as entertainment slaves. The Middle Ages have brought religious explanations for disabilities, where these conditions have been thought to be punishment from God or the result of demonic possession. However, even then there have been monasteries that have provided care and support for these persons (Metzler, 2016).

Over time, attitudes have begun to change. In the 19th century, the work of Doctor Jean-Marc Gaspard Itard and his student Edouard Seguin, who have developed educational methods for people with intellectual disabilities, have laid the foundation for modern special education (New World Encyclopedia, 2023; Britannica, 2023). In the 20th century, the advent of intelligence tests and legislative changes, such as the Education of All Handicapped Children Act of 1975, have significantly changed the way these individuals have been educated and integrated into society (Yell, Rogers, & Lodge, 1998).

More recently, inclusive education has become a global goal, driven by documents such as the Salamanca Declaration (1994) and the Convention on the Rights of Persons with Disabilities (2006). These documents have required that children with special educational needs have access to mainstream schools and are supported in inclusive environments (UNESCO, 1994; United Nations, 2006).

Through these historic changes, from prejudice and marginalization to acceptance and support, society has made significant progress in securing the rights and improving the lives of people with intellectual disabilities. However, challenges remain, requiring continued engagement for full inclusion and equality.

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CHAPTER 8

THE USE OF TECHNOLOGY AS AN EARLY INTERVENTION IN AUTISM SPECTRUM DISORDER: A REVIEW OF STUDIES ON TEACHING COMMUNICATION AND SOCIAL SKILLS

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Autism Spectrum Disorder, which was first described by Leo Kanner in 1943, is a brain-based neurodevelopmental disorder. It is characterized by difficulties in social communication and interaction, as well as restricted and repetitive behaviors or interests (American Psychiatric Association, 2013). Individuals with autism spectrum disorder may face challenges in the social and communication skills required for their daily lives, depending on the severity of the condition. These symptoms can vary in intensity and characteristics from one individual to another (Akbıyık et al., 2024; dos Santos et al., 2025).

As with many other special needs, the symptoms of autism spectrum disorder are most commonly observed and diagnosed during the early years of life (Chellew et al., 2024). From an early age, children begin to lay the foundations of their first social skills, such as understanding emotions, sharing emotions, expressing themselves, establishing empathy, and developing theory of mind, and they find opportunities to display these skills to a community or group for the first time (Manning et al., 2019; Möller et al., 2016). During this period, the first signs of social skill and communication needs in children with autism spectrum disorder can also be observed (Sağdıç & Sani-Bozkurt, 2020).

The deficiencies in communication and social skills, which are among the first signs observed in children with autism spectrum disorder in their interactions with others, present an opportunity for early diagnosis and intervention. This creates an important opportunity to provide support tailored to the developmental needs of children (Monteiro et al., 2019). Indeed, early detection of autism spectrum disorder and intervention during the brain's most flexible and receptive period often yields the best results (Estes et al., 2015; Wei et al., 2024). However, the high heterogeneity of symptoms in children with autism spectrum disorder, difficulties in accessing diagnostic and assessment tools, and the shortage of qualified professionals in the field are major factors that hinder early diagnosis and the implementation of intervention programs. Due to these disadvantages, although many children could receive a diagnosis and intervention for autism spectrum disorder by 18

months, a large majority only receive the initial diagnostic evaluation and subsequent interventions by the age of five or even later, during school age. In short, early intervention opportunities are not sufficiently utilized for many children (Hyman et al., 2020; van't Hof et al., 2021).

From a child's rights perspective, it is indeed distressing that children with autism spectrum disorder do not fully benefit from their educational and healthcare rights. In other words, the challenges faced in the diagnostic and early intervention process for autism spectrum disorder are concerning. However, when we look at the situation positively, there is a significant global increase in access to diagnostic and early intervention programs, and this trend continues to grow each year (Coşkun, 2025). This growth has been notably influenced by the integration of technological advancements into the health and education sectors, which have led to the development of new and effective solutions to help children diagnosed with autism spectrum disorder acquire social skills (Washington et al., 2020). Indeed, over the past five years, digital tools such as video-based training, AI-supported interventions, mobile applications, virtual reality, and augmented reality have revolutionized social skills training for children with autism spectrum disorder, enabling the creation of new applications and educational/intervention programs for individuals with autism spectrum disorder (Fernández-Batanero et al., 2024; Li et al., 2024).

In summary, the innovative applications offered by technology aim to enable children diagnosed with autism spectrum disorder to test social interactions in technological environments, respond appropriately to social scenarios, understand emotional expressions, and demonstrate appropriate behaviors by reading others' emotional states (Gallardo-Montes et al., 2022; Zhang et al., 2022). Video and video game-based training programs help children with autism spectrum disorder learn social skills by observing or watching social interactions, thus being used to model social interactions and teach appropriate behaviors (Jiménez-Muñoz et al., 2024). AI-supported applications aim to personalize learning processes to enhance children's social

interaction skills, instantly analyzing their responses to stimuli and adapting learning materials and activities to meet the child's specific needs (Li et al., 2024). Finally, advanced technologies such as virtual reality and augmented reality can offer children environments similar to real-world social scenarios, allowing them to safely experience these scenarios and practice their social skills (Zhang et al., 2022).

Determining the effectiveness of new technologies in the educational processes of children diagnosed with autism spectrum disorder is challenging. One of the primary difficulties is the rapid pace of technological advancements. For example, artificial intelligence interfaces such as ChatGPT, which emerged only recently, have been widely integrated into education at all levels, including for children with autism spectrum disorder (Ashraf et al., 2024). Similarly, the Metaverse, which made a significant global impact a few years ago, has been quickly incorporated into education and has been utilized in the education of children diagnosed with autism spectrum disorder (Lee et al., 2022). However, due to the limited adoption of the Metaverse, it has not been widely used in the education of children with autism spectrum disorder. Technological advancements in areas such as video, video games, and mobile applications have also contributed to the reduced use of previous tools (Ghanouni et al., 2020; Granić, 2022).

As a result, such rapid transformations and the replacement of one technology with another that emerged in the recent past make it difficult to assess the bigger picture based on existing research. These challenges also contribute to the limited number of effectiveness studies concerning technological interventions for children diagnosed with autism spectrum disorder. Although previous review studies are relatively recent, the speed of technological advancements necessitates the continuous re-examination of recent developments and an overall evaluation. Therefore, the aim of this paper is to comprehensively examine the existing technological interventions aimed at developing social skills in children diagnosed with autism spectrum disorder, with a specific focus on the early childhood period. Additionally, this

paper aims to assess the impact and potential of these digital tools in educational processes and explore how these innovative solutions may play a transformative role in the future of autism spectrum disorder education.

Method

This review paper aims to comprehensively examine the existing technological interventions designed to enhance the social skills of children diagnosed with autism spectrum disorder (asd), specifically those between the ages of 0 and 8. To achieve this, a systematic approach was utilized to identify and analyze relevant studies, digital tools, and technological applications that have been developed and implemented in autism spectrum disorder education over the past five years.

Research Model

A broad literature search was conducted in multiple academic databases, including Google Scholar, PubMed, ERIC, and ScienceDirect. The search included studies published between 2020 and 2024 to ensure a comprehensive review of the most recent developments in technological interventions for autism spectrum disorder. Key search terms included "autism spectrum disorder," "autism social skills development," "autism digital tools," "autism video-based interventions," "autism AI applications," "autism virtual reality (VR)," "autism augmented reality (AR)," and "autism mobile applications." Articles that focused on the use of technology for educational purposes in children with autism spectrum disorder, including both peer-reviewed journal articles, were selected for review.

Inclusion and Exclusion Criteria

The following criteria were used to ensure the relevance and quality of studies included in this review. These criteria specifically focus on technological interventions aimed at enhancing social skills in children diagnosed with autism spectrum disorder aged 0-8 years, published between 2020 and 2024.

Table 1. Inclusion and Exclusion Criteria for the Studies Reviewed in This Paper

Criteria	Details
Participants	Children diagnosed with ASD aged 0-8 years
Timeframe	Studies published between 2020 and 2024
Intervention Focus	Research investigating technological interventions for social skills development (e.g., video-based training, AI applications, VR/AR)
Data Type	Studies qualitative analysis on the effectiveness of technological tools
Exclusion Criteria	Studies not focusing on ASD or social skills development in children aged 0-8; Studies with insufficient data,

Data Collection and Analysis Process

A literature review was conducted according to the inclusion and exclusion criteria. The studies that met the criteria were included in this research. The identified studies were initially classified by publication year. Subsequently, a form was created based on the topics to be examined in the studies. This form was designed to record the coding for the "authors," "study title," "year," "technology used," and "outcomes" of the intervention studies to be analyzed. Afterward, all the identified studies were read, and the information was placed into the form according to the fields specified. During this process, a total of … studies that met the criteria were found. Following a detailed review for compliance with inclusion and exclusion criteria, 19 studies that did not meet the required characteristics were excluded, leaving 13 studies included in the present research.

Reliability

In this study, as part of the reliability analysis, the data were reviewed by two researchers specialized in special education. The information was recorded in the form, and the results were calculated using the formula suggested by Miles and Huberman (1994) [(Agreement) / (Agreement + Disagreement) x 100]. Based on these calculations, the reliability was found to be 92%.

As a result of the literature review, a total of 470 articles were identified. Following an evaluation based on the selection criteria, 13 articles were chosen for detailed analysis and included in the scope of the study. The PRISMA flow diagram illustrating the systematic review and selection phases of the articles is presented in Figure 1.

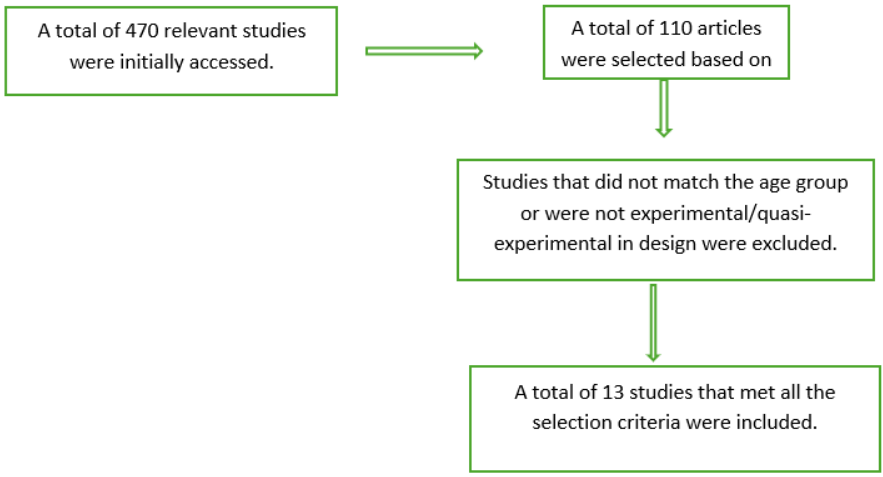

Figure 1. PRISMA Flow Diagram

Results

A total of 470 articles were initially identified through the literature search. After applying the inclusion and exclusion criteria, 13 studies were selected for detailed analysis. These studies focused on technological interventions designed to enhance social skills in children diagnosed with autism spectrum disorder aged 0-8 years. The selected studies were published between 2020 and 2024, and involved various technological tools, including video-based training, artificial intelligence (AI) applications, virtual reality (VR), and augmented reality (AR). A summary of these studies is provided in Table 2, which includes key details such as the authors, study titles, technologies used, and the outcomes of each intervention

Table 2. *Selected Studies*

	Author (s)	Participants	Target Skill	Setting	Intervention Process	Method	Findings
1.	Billing et al., 2020	Ages 3-6, 61 participants ASD	Joint attention, turn-taking, imitation	Clinic	Eight robot intervention, approximately 32 minutes each, conducted biweekly.	Experimental Research	Robots show promising potential in the targeted skill areas.
2.	David et al., 2020	Ages 3-5, 5 participants ASD	To determine the extent to which social robots can improve turn-taking skills and whether such interventions provide similar or better outcomes compared to standard interventions.	Room	20 sessions of 5-15 minutes each over 20 days. 8 pre-tests. Robot sessions: 1 session per day (each lasting 10 minutes). 8 human sessions: 1 session per day (each lasting 10 minutes). 4 sessions (robot or human): 1 session per day (each lasting 10 minutes).	Single-Subject Research	Although the outcomes of sessions conducted with humans and robots were similar, children showed significantly greater interest in robots.
3.	Desideri et al., 2020	Ages 6, 1 participants ASD	Social interaction	Classroom	12 weeks of 10-minute robot-assisted sessions	Single-Subject Research	The use of robots enhances opportunities for social interaction.
4.	Marino et al., 2020	Ages 4-8, 14 participants ASD	Social-emotional skills	Clinic	10 robot-assisted sessions, each lasting 90 minutes, conducted twice a week	Experimental Research	Significant improvements in social-emotional skills were observed in the robot group compared to cognitive-behavioral therapy.

5.	So, et al., 2023	Ages 6-8, 18 participants ASD	Joint attention, communication, eye contact	Clinic	6 robot-assisted sessions, each lasting 30 minutes, over 3 weeks	Mixed Design	Robots are effective in the targeted skills.
6.	Syrdal et al., 2020	Ages 2-6, 19 participants ASD	Communication, interaction	Preschool	Each child spent an average of 16.53 months in the study. Robots were used.	Qualitative Study	Progress in communication and interaction was reported.
7.	Tuna, 2022	Ages 6-8, 2 participants ASD	Symbolic play skills	Classroom	Two sessions of 15 minutes each were conducted daily with 5 trials. Robots were used.	Single-Subject Research	The use of robots is effective in the development of symbolic play.
8.	van den Berk-Smeekens et al., 2022	Ages 3, 73 participants ASD	Social communication	Classroom	It consists of 20 robot-assisted sessions, each lasting 45 minutes, conducted once a week.	Experimental Research	Significant gains were observed in the robot intervention group compared to other groups.
9.	Demircioğlu, 2023 (Thesis)	Ages 6-7, 3 participants ASD	Greeting skills	School	The video modeling application for learning, generalization, and monitoring sessions was continued with video modeling.	Single-Subject Research	As a result of applying the video modeling teaching method to teach the greeting skill, desired changes were observed in the participants.
10.	Eriş,2021 (Thesis)	Ages 7, 3 participants ASD	Play skills	School	To determine the effectiveness of video modeling in teaching play skills, baseline, probe, teaching, and monitoring sessions were conducted.	Single-Subject Research	It was shown that video modeling was effective in teaching play skills to children diagnosed with ASD, and that the participants were able to maintain their gains at the end of the intervention process, as well as in the 1st, 2nd, and 4th weeks after the intervention.

11.	Gökçe, 2023 (Thesis)	Ages 4-6, 3 participants ASD	Social response behavior, including verbal expression, facial expressions, and gestures	School	Video model and video animation.	Single-Subject Research	Comparing the effectiveness and efficiency of teaching social response behaviors (SRB) to children in terms of acquisition, maintenance, and generalization using video modeling (VM) and video animation modeling (VAM).
12.	Keskin, 2021 (Thesis)	Ages 4-7, 4 participants ASD	Communication skills	School	Interactive teaching (dialogue) was used. In the teaching sessions, photos were uploaded to a tablet computer using the pre-installed StoryCreator® app, creating a photo album, and predefined dialogues for each photo were recorded audibly.	Single-Subject Research	The findings indicated that participants acquired verbal communication skills through interactive teaching and generalized them to various environments and individuals. Additionally, the participants maintained the skill two, four, and six weeks later. It was also noted that, aside from the taught dialogues, participants used new expressions.
13.	Özer, 2024 (Thesis)	Ages 4-5, 4 participants ASD	Joint attention	School	Immediately after the completion of the virtual reality teaching sessions, generalization sessions were conducted, followed by follow-up sessions at 7, 15, 30, and 60 days.	Single-Subject Research	Effectiveness findings indicate that the teaching method with gradual assistance delivered through augmented reality technology is effective in teaching joint attention initiation skills to participants with ASD.

Based on the literature review, 13 studies that met the inclusion criteria were identified, consisting of 8 articles and 5 theses. Upon reviewing these studies, it was found that all were conducted in settings such as schools, classrooms, or clinics. Of these, 12 studies reported positive outcomes in the development of specific target skills. A notable portion of these studies highlighted the role of technology in providing effective methods and applications during the early stages of skill development. However, one study, conducted by Billing et al. (2020), focused on the educational potential of robots. This study emphasized the promise of robots as tools and provided a novel perspective on how robotic technology could be leveraged in the development of social skills. Specifically, it was underscored that robots can serve as supportive and interactive tools within the learning process.

Furthermore, the study revealed differences in social communication and interaction skills between comparison groups, where robot interventions were applied to individuals with autism spectrum disorder and those where such interventions were not implemented (David et al., 2020; Marino et al., 2020; van den Berk-Smeekens, 2022). Two studies comparing human-robot interventions in individuals with autism spectrum disorder found that participants showed a greater interest in robots, suggesting that robotic interventions could potentially influence the development of social skills (David et al., 2020). In three studies examining traditional interventions for autism spectrum disorder alongside robot-assisted interventions, it was reported that the scores in groups using robots were significantly higher compared to those in the traditional intervention groups (Marino et al., 2020; van den Berk-Smeekens et al., 2022).

Discussion and Conclusion

This study aims to comprehensively examine the impact of technology on social skills training for children diagnosed with autism spectrum disorder, specifically those aged 0-8. In recent years, there has been a growing interest in the literature regarding the significant contributions of digital tools, particularly video-based training, artificial intelligence, and virtual reality, to

the development of social skills in children with autism spectrum disorder. Given that the diagnosis of autism spectrum disorder is most commonly made in the early years of life, the majority of technology-based interventions targeting social skills have been implemented during early childhood. This study reviews the existing literature on technology-supported social skills training for children with autism spectrum disorder in the early childhood period.

When evaluating the effectiveness of studies aimed at teaching social skills to children diagnosed with autism spectrum disorder included in the research, all the studies reviewed reported an improvement in the social skill levels of the children. Moreover, the vast majority of the studies incorporated control groups, which enhances the reliability of the findings regarding the effectiveness of the applied programs. Nevertheless, nearly all of the studies underscored the necessity of conducting future research with larger sample sizes or diverse groups. Although this recommendation might appear straightforward, it is crucial to recognize that achieving such a goal is not without its challenges. For instance, a recent meta-analysis conducted by Grynszpan et al. (2014) highlighted the positive effects of technology-based interventions on the communication and social skills of children with autism spectrum disorder and emphasized the need for continued research. However, the technologies used in the studies included in the meta-analysis, such as video-based training and DVDs, have since become outdated and have lost their relevance in the current context. In fact, it would not be surprising today for a child in primary education to be unfamiliar with CD and DVD technologies. Consequently, the rapid pace of technological advancements has rendered older technologies obsolete, making it increasingly difficult to refer to studies conducted with outdated tools.

The research findings included in this study, which highlight the positive impact of new technologies on the acquisition of social skills in children with autism spectrum disorder, are undoubtedly encouraging. However, it is important to approach these results with caution. For instance, tablet computers, which have only recently become widespread, were initially

regarded as a promising and groundbreaking technology for teaching social skills to children diagnosed with autism spectrum disorder (Hourcade et al., 2012). Yet, some recent studies indicate that tablet computers and mobile applications have not produced the anticipated effects on the social development of children with autism spectrum disorder (Paquet et al., 2022). Moreover, certain research has suggested that excessive screen time during early childhood may pose a risk to the social skills development of children with autism spectrum disorder (Dong et al., 2021; Ophir et al., 2023; Yeterge, 2023). This concern extends beyond children with autism spectrum disorder. The effects of screen time on the social relationships of typically developing children, as well as the appropriate amount of screen time, continue to be a topic of ongoing debate (Qi et al., 2023).

In the future, artificial intelligence-based social robots, which have been proposed to assist children with autism spectrum disorder in acquiring social skills according to the research presented in this study, may be met with skepticism or may become obsolete and largely replaced by emerging technologies. Nonetheless, it is crucial to underscore that exploring innovative avenues to promote educational and social advancements for individuals with autism spectrum disorder remains highly valuable. This is due to the fact that there is no singular learning style that applies universally; learning styles can differ significantly from one individual to another (Tum & Kutluca, 2021). From this standpoint, it is evident that new technologies or methodologies have the potential to enrich the learning process. For example, a study by David et al. (2020) emphasized that some children with autism spectrum disorder prefer interacting with artificial intelligence-based social robots instead of engaging with humans. Given that the capabilities of artificial intelligence applications are continuously advancing, it is reasonable to anticipate the emergence of social robot applications designed to meet the needs of a larger number of children in the future.

One of the primary limitations in studies involving individuals with special needs is the small sample size. In this research, the largest sample sizes were reported in the studies by Billing et al. (2020) (N=61) and van den Berg-

Smeekens et al. (2022) (N=73), while a considerable number of studies employed a single-subject design. In this regard, future studies with larger sample sizes could provide a more comprehensive understanding of the benefits of current technologies and facilitate the integration of emerging technologies into educational practices. Although most studies emphasize short-term effects, the inclusion of follow-up sessions in nearly all of the studies is regarded as a positive feature.

Finally, it may be crucial to emphasize the role of family involvement. During early childhood, children with autism spectrum disorder spend considerable time with their families, and professionals working with these children advocate for family participation in the educational process to enhance its effectiveness and support skill acquisition (Pacia et al., 2022). Indeed, in the early intervention programs following an autism spectrum disorder diagnosis, family involvement is integral, and families are often central to these programs (Mai & Chaimongkol, 2022). However, upon reviewing the studies included in this research, it is evident that family participation is not given sufficient emphasis. Given the challenges adults face in adopting new technologies and the critical role families play in helping individuals with autism spectrum disorder develop skills, this oversight represents a significant limitation. Future technology-supported studies that investigate the impact of family involvement could yield substantial benefits.

Recommendations

In summary, it is difficult to predict the extent to which technology will develop and what it will affect, making it challenging to make future-oriented suggestions. In current research, AI-based social robots have significant potential to help children with autism spectrum disorder acquire social skills by catering to individual learning styles. Future studies using larger sample sizes and more advanced AI interfaces could create a significant change. Additionally many studies in this area suffer from small sample sizes, limiting the generalizability of their findings. Larger sample sizes and long-term follow-up studies are needed to better understand the lasting impact of these technologies. Finally, family involvement, a crucial element in early childhood

autism interventions, is often overlooked in research. Future studies should explore how family participation can enhance the effectiveness of technology-supported interventions.

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CHAPTER 9

HIGHER VOCATIONAL SCHOOL EFL LEARNERS' MOTIVATIONAL ORIENTATIONS

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Introduction

The study of student motivation as part of English as a foreign language (EFL) education has been of great interest to scholars and educators for its vital influence in determining students' learning outcomes and overall academic achievement. Previous research has determined various factors that influence non-native learners' motivation while learning EFL at tertiary level. Relevant research indicates that motivation is a complex construct as it comprises both intrinsic and extrinsic elements that may greatly influence learning. Researchers have also highlighted the need to understand the different types of motivation that drive learners as well as the factors that shape their sustained motivation in their EFL learning experiences (Bobkina, Gómez-Ortiz, Núñez del Río, & Sastre-Merino, 2021; Rahardjo & Pertiwi, 2020).

It is particularly important in the context of higher vocational educational institutions, as these focus primarily on training students for specific professions (Rahardjo & Pertiwi, 2020; Wang, Xu, & Li, 2023). Therefore, this research aims to investigate the motivational orientations of EFL learners at a two-year vocational college in the western part of Türkiye, focusing mainly on learners' attitudes and reasons for learning EFL.

Literature Review

Motivation is a key component in successful language learning. Given its complex structure, which is shaped by various internal and external factors, it has long been investigated with an aim to better understand this psychological aspect of language learning. To speak more specifically, it is one of the individual differences in the process of learning a foreign language, affecting various outcomes including learner success and perseverance (Shekan, 1989).

According to early studies by Gardner and Lambert (1972, p. 3), there are two main types of motivation for learning a language. If the learner's orientation towards learning reflects a more utilitarian interest such as getting a prestigious job or achieving a higher GPA, then it is called instrumental motivation. On the other hand, if this orientation is integrative then it is the learner's wish to learn more about the culture and the community in which that language originally belongs. While in the former, language learning is an instrument to reach a goal, in the latter, language serves as an integrator among members of different communities, serving as the purpose itself, rather than just being a means.

In the cognitive theory of motivation, Deci and Ryan (1985) provide a more comprehensive look at the learner motivation by suggesting the following concepts: extrinsic motivation, intrinsic motivation, and amotivation. Since Deci and Ryan (1985) explained motivation within the Self-Determination Theory, the purpose was to provide a more comprehensive and inclusive understanding of learners' motivational orientations. In intrinsic motivation, it is common to observe internal rewards (e.g., personal achievement), while in extrinsic motivation, the driving force may be a reward such as grade. In this view, the relationship between those two motivation types is also emphasized since they may positively or negatively influence each other. Overall, understanding the balance between intrinsic and extrinsic motivation is important for optimizing educational outcomes.

Additionally, Dörnyei (2005) suggested L2 Motivational Self System for understanding language learning motivation. This framework proposed that L2 motivation is shaped by three components. The first of those is the "Ideal L2 Self," which refers to the aspect which serves as a strong trigger for learning the language. Ought-to L2 Self represents a more extrinsic type of motivation and deals with the expected features a language learner must own, namely by others. Finally, L2 Learning Experience represents the

"executive" objectives as determined by the context surrounding the learner and learning including their positive and negative experiences.

In addition to these approaches to explain motivation types, Dörnyei (2003, p. 14) claims that researchers are also attracted by "motivational basis of learning tasks" because they have a chance to break L2 learning process into segments, which would bring about an easier study of this process. Within this framework, it should be noted that the task motivation is "negotiated and finalized" in the learner and this system is represented by three stages, each situated at the one hand of a triangle (Figure 1). They are *task execution*, *appraisal* and *action control*. The learner's engagement, her continuous processing of the progress made toward the action outcome, and her enhancement of the action represent each step, respectively (p.16). Below is the schematic representation of this process.

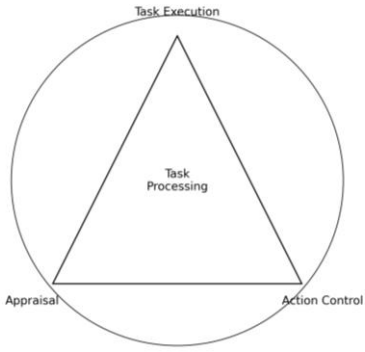


Figure 1. Schematic figure of the task processing (adapted from Dörnyei, 2003, p. 15)

The task process enables the learner to engage in the lesson by facilitating the flow of the course. If such a task is carried out in groups or pairs rather than performing individually, then this membership would be more powerful in increasing the motivation of the group members. Dörnyei (2001, p. 250) names this groups dynamics and states three ways through which this impact on members is achieved. They are as follows:

Membership has a powerful impact on group members' motivation and behavior through:

- The socionormative influences of peer pressure
- The directive influence of group goals
- The general effects of group cohesiveness on group performance

Julkunen (2001) claims that "in classroom context, motivation can be seen as a continuous interaction process between the learner and the environment" (in Dörnyei & Schmidt, 2001). Therefore, not only instrumental and integrative motivation but also some other factors such as group or pair work tasks completed in class should be seen and regarded as a way of evaluating and increasing the learners' motivation to learn a foreign language. Learners may prefer group or individual work in language learning, but these preferences are not necessarily personal choices. Language learners enter the classroom with different levels of intrinsic or extrinsic motivation, i.e. their own reasons for wanting to learn a language. The question is how classroom dynamics and learner orientations can influence this initial motivation. This study investigates these questions through data collected from a large group of EFL learners at a higher vocational college examining their motivations both within and beyond the classroom, as well as their attitudes toward second language learning.

Cultural and Individual Differences in Motivational Orientations

Research has shown that different groups of language learners may have different motivational orientations (Rahardjo & Pertiwi, 2020; Tasgin & Coskun, 2018). Factors such as age, gender, cultural background, prior learning experiences, and personal goals can influence what motivates learners to study a language. A study of Indonesian EFL university students revealed three main motivational factors: instrumental motivation tied to career advancement and economic goals; international orientation focused on overseas study, travel, and cross-cultural communication; and intrinsic

motivation stemming from personal fulfillment and parental approval (Setiyadi & Mahpul, 2019).

In order to create effective learning environments that meet the specific needs and aspirations of EFL learners in higher vocational education, it is crucial to understand their different motivational orientations. Teachers should adopt a flexible approach that encompasses a range of motivational strategies, while remaining sensitive to the various factors that influence students' motivation. Teachers can help college EFL learners develop a sincere passion for language learning and reach their full potential by fostering a positive and supportive classroom atmosphere that emphasizes both intrinsic and extrinsic motivators. Therefore, the present study aims to investigate the motivational profiles and orientations of EFL learners enrolled in English II classes at a higher vocational school/college in Türkiye.

Method

Participants

The participants of the study are 100 (f = 84) first year students at a Higher Vocational School of a Public University in Türkiye. The ages of the participants range from 17 to 23. The ratio of the time they have last studied English changes from 20 years now to without interval up to now. They study at two-year programs such as Textile, Fashion Design, Accounting, and they are enrolled in a compulsory English class. Most of the students are false beginners and they already have experience of learning English. Therefore, as a researcher, the teacher's purpose is to see the results of these two different learning experiences of the learners, in other words, whether individual work or group work is more appropriate and enjoyable for their own learning style.

Instrument

For conducting the research, a questionnaire was designed in order to achieve a trade-off between the motivation sources of the learners before they take this course and their attitude toward group work and pair work

tasks and activities. To comprise all aspects of motivational orientations of EFL learners in the relevant context, a new questionnaire was devised/adapated based on the existing resources. Following Dörnyei's (2003) guidelines in constructing a questionnaire, the researcher designed a Likert-scale questionnaire which consists of six different parts. In the first part, the purpose was to learn the learners' orientations for learning a language. The participants were asked to select as many options as they wished. Thus, their attitude and reasons for learning a language would be clarified by the researcher which would affect their overall look on L2 learning. In the second part, they were asked to rank the importance of their motivation along with some other reasons for learning a foreign language. This would help to clarify their view of motivation so that they would be able to face their own view of efforts and approaches for their success and failure. The third part comprised 38 questions, and some of these questions were written in the light of several other questionnaires.[*] In the fourth part, the participants were asked questions about themselves to draw a fuller picture of the students' attitude toward L2 learning. In the fifth and sixth parts, the participants were asked to rank the importance of group work and to give their opinion on the necessity of working together while learning a language. These items will also show us the internal consistency of the answers of the learners by asking their direct answers to questions.

Procedure

The questionnaire was distributed to the students in the last week of the term on which most of the students would present their optional group work or individual work projects to the rest of the class. Although required information was supplied on the questionnaire, the teacher researcher explained to them the purpose of the research, and the sections that are

[*] Survey Questionnaire Questions by Kimi Kondo-Brown in the article "Bilingual Heritage Students' Language Contact and Motivation (in Dörnyei & Schmidt, 2001); Language Orientation Questionnaire by Dörnyei & Clement in the article "Motivational Characteristics of Learning Different Target Languages: results of a Nationwide Survey" (in Dörnyei & Schmidt, 2001)

included on the questionnaire. They were assured of anonymity and that it would not affect their grade. It took approximately 15 minutes to complete.

Findings and Discussion

Since the purpose of the research is to examine the motivational orientations of the EFL learners towards different aspects of learning English as a foreign language, the findings were analyzed descriptively. In the first part of the questionnaire, the participants were asked to tick the reasons for their learning English. Although they do not seem so conscious at times, only six of them said that they took this course as it is obligatory at school. This part consisted of ten items, and the most favored reasons for learning English were marked as "to get a prestigious job", "as the life requires me to learn a foreign language" and "as it enables me to improve myself, respectively. This shows us that most of the students have their own instrumental motives more than integrative ones because the items which reflect integrative motivation (item 2 and 10 and 7 more or the less) are not favored by the students.

1= to get a prestigious job
2=to travel and to visit foreign countries
3= as life requires me to learn a foreign language
4= as this is an important language
5= to get a higher GPA
6= as it is an obligatory course at school
7= to watch films and understand songs in English
8= as it enables me to improve myself
9=as it is the language of the future
10=to be able to communicate with tourists

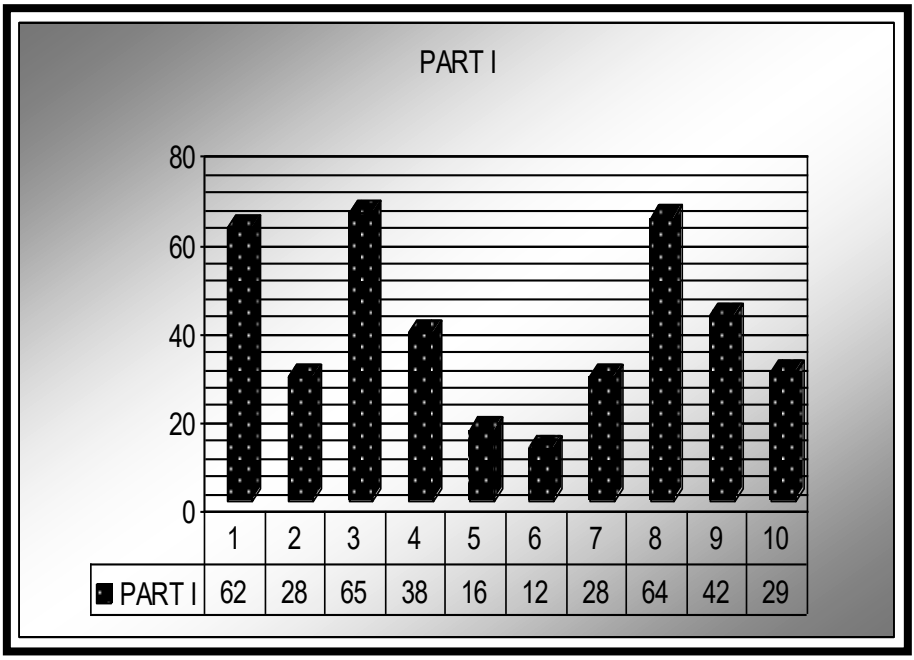
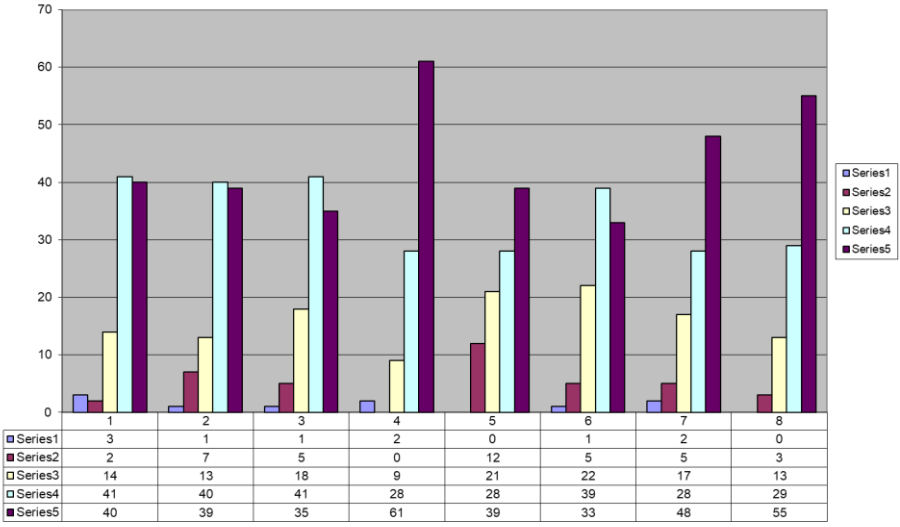


Figure 2. EFL learners' reasons for learning English

In the second part, EFL learners were asked to rank the motivation among four other items, which are the teacher, the way the lesson was conducted, the background knowledge of L2 and the materials. The results show that 44 of the participants see motivation as of primary importance and 7 of them place it as the least important on the scale. This proves that nearly half of the students are aware of the fact that motivation is necessary for learning.

In the third part of the questionnaire, there are a variety of questions posed to participants. Through the questions the researcher tries to find out several aspects such as language learning milieu, that is, the extent of the parents' support and attitude towards L2 learning. This forms the first group of questions. Seventy 9 of the students marked 4 and 5 on the scale to rate how much value their parents attribute to their learning English. The reason for investigating that is also associated with the questions related to the participants in part IV. The second group of questions evaluates the attitudes towards L2. The results suggest that the students have positive attitudes

toward L2 although they are not happy with their previous learning experience.

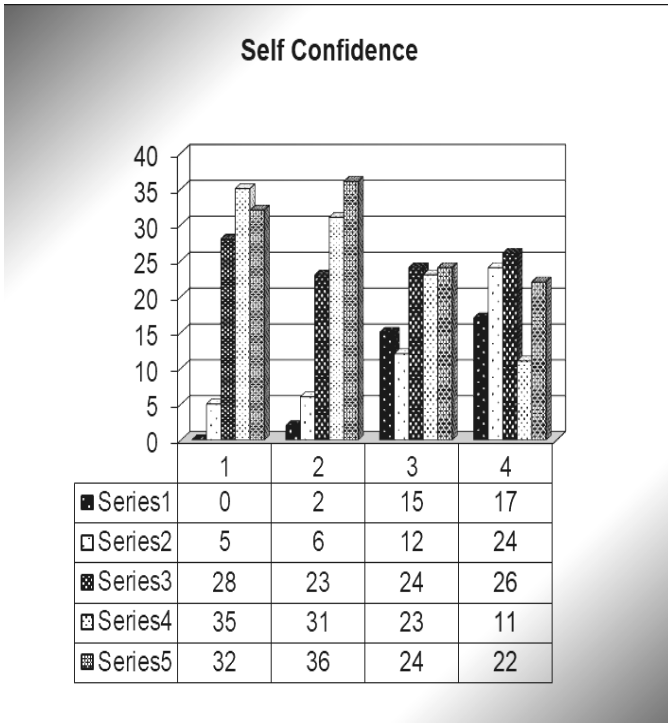


	1	2	3	4	5	6	7	8
Series1	3	1	1	2	0	1	2	0
Series2	2	7	5	0	12	5	5	3
Series3	14	13	18	9	21	22	17	13
Series4	41	40	41	28	28	39	28	29
Series5	40	39	35	61	39	33	48	55

Figure 3. EFL learners' attitudes towards learning L2

*1= Language Learning is challenging work (Question 1), 2= I think L2 is important among the other classes at school (Q 3), 3= I like learning L2 (Q 5), 4= L2 Learning is important as it will enable us to communicate with native speakers. (Q 6), 5= I want to learn more languages (Q 7), 6= I like communicating with people belonging to other cultures (Q 8), 7= I would take this course even if it is not obligatory at school (Q 9), 8= It is important for me to learn the things taught in this class (Q 14), Series 1 = 1 and Series 5= 5 on a Likert scale.

The third group of questions aims to examine the students' self-confidence while performing in class, especially while talking. The results suggest that the students are more or the less confident of themselves apart from the situations in which they have to talk.



	1	2	3	4
Series1	0	2	15	17
Series2	5	6	12	24
Series3	28	23	24	26
Series4	35	31	23	11
Series5	32	36	24	22

Figure 4. EFL learners' self confidence as a part of motivational orientations

*1= I can learn L2 in the best way. (Question 4), 2= I believe that I will get a high mark for this course. (Q 10), 3= When I have to talk in class, I feel uncomfortable (Q 11, negative coding), 4= I doubt to make mistakes while talking in class (Q 12, negative coding)

The fourth group of questions evaluates the integrative motivation of the students to a certain extent. It asks them how helpful the classroom activities would be helpful in preparing them to communicate with native speakers. It proves that the students are aware of the fact that these activities would help them a lot while talking to native speakers of English.

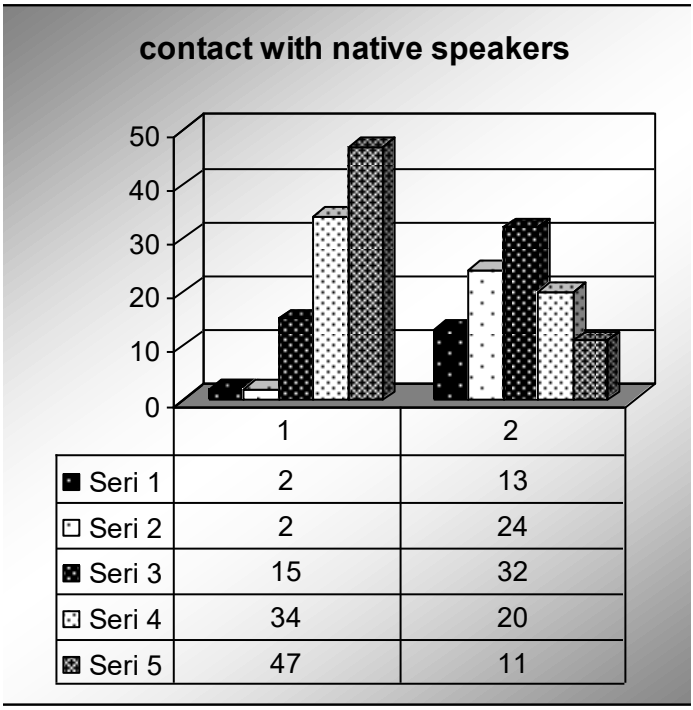


Figure 5. EFL learners' view of classwork in relation to out-of-class communication

*1= I think the activities done in class would be helpful while talking to foreigners, 2= With the help of the tasks performed in class and outside the class I get prepared to communicate with foreigners

The last two groups of questions aim to understand the attitudes of the participants towards individual and group work activities and projects. The findings indicate that 89 students found group-work activities useful to increase their motivation, while 11 of them did not find it useful. The next set of questions aimed at understanding EFL learners' attitudes towards working alone as opposed to on their own. The findings indicate that EFL learners favor working in groups rather than working individually.

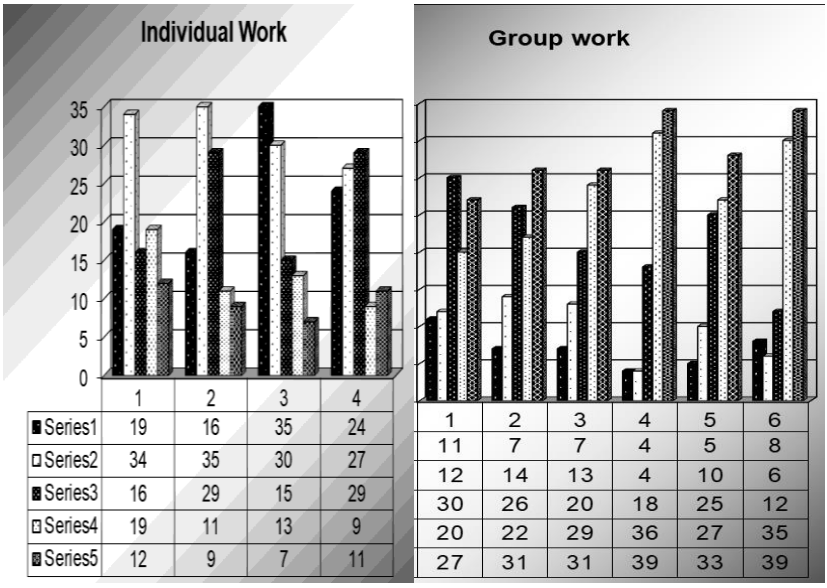
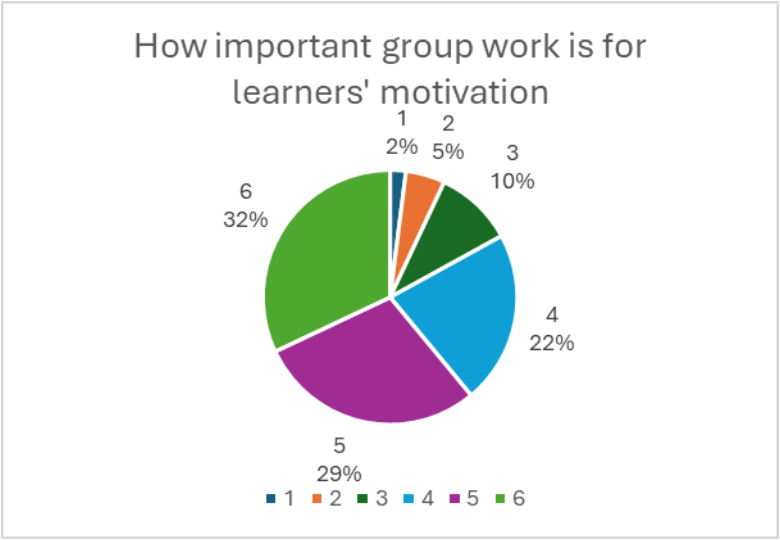


Figure 6. EFL learners' preferences for group and individual work

In the fifth part, they were asked to rank the importance of group work in relation to their motivation. As the results suggest, 32 percent rated it the highest and just 2 of the 100 participants thought that it was ineffective. The graphic demonstration of the results demonstrates that while 29 and 24 students regard group work as a motivator in their learning process as of primary and secondary importance, there are others who do not see it as an important factor. This shows us that the participants do not see group work or pair work as prominent for increasing effective learning with high motivation.

As for the last part, which is a direct question posed to the participants, it is a good one to learn the attitudes toward the necessity of group work and pair wok projects or activities in L2 learning. Exactly 11 out of 100 participants stated that group work is unnecessary. They gave reasons such as "I like working alone", "In group work projects only one person works and the rest do not work", "because I think individual works are more useful", "because I will attend an English course when I finish my school". As is seen, their reasons are varied but on the whole their reasons for the

appraisal of individual work are due to their individual preferences and also related to their own learning style.



*1 refers to "0" (Strongly agree) on a Likert scale while 6 refers to "5" (Strongly agree)

Figure 7. The importance of group work in relation to EFL learners' motivation

Overall, the findings indicate that learners have a wide range of motivational orientations learner motivations are diverse and span a wide range, encompassing intrinsic, extrinsic, and amotivation (Tasgin & Coskun, 2018). It is essential to recognize and address the complexity of these motivations when designing learning environments and strategies. Personal fulfillment and having parental approval are also among the factors that have been shown to affect learners' motivational profiles (Setiyadi & Mahpul, 2019). The present study also showed that EFL learners found group work activities more favorable compared to individual work activities although no inferential tests were performed to indicate that the differences were significant. Group work activities have been shown to increase learners'

motivation, and thus should be encouraged in meaningful ways (Dörnyei & Csizér, 2002; Meşe & Sevilen, 2021).

Based on the findings of the study, no generalization should be made since the findings only represent self-report measures of a small portion of the population. The findings were likely to be also affected by a variety of factors such as age, gender, family background, learning experience among others, although their roles were not studied in the present study. No inferential statistics were reported, and the study did not have a pilot testing phase to increase the reliability of the questionnaire. Therefore, the findings of this study should be approached with caution since it constitutes an initial phase of broader and comprehensive studies of motivation among EFL learners.

Conclusion

The present study shows that learner motivations are multifaceted and diverse, and EFL learners who study at a two-year college have both instrumental and integrative motivation towards language learning, albeit to varying degrees. However, the former seems to be more prevalent among the participants in the present study. It is important to recognize this range of motivational systems in educational settings. The findings further indicate that EFL learners are cognizant of the importance of learning languages, and they favor group work activities over working on their own, which positively affects their motivation. Acknowledging the role of group work and collaboration can contribute to a more engaging learning environment. By understanding and addressing the complexities of student motivation, educators can create more effective learning experiences that cater to the unique needs of each learner.

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CHAPTER 10

A REVIEW OF THE INFLUENCES OF SOCIOECONOMIC STATUS OR SOCIAL CLASS ON CHILDREN'S COGNITIVE SKILLS AND EDUCATIONAL ATTAINMENT

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Introduction

Theorists and researchers have addressed social class differences, inequalities and gaps in educational test points and outcomes of children from the ages of early childhood. Cultural explanations denote that children from working-class families resist learning activities and that differences in cultural capital along socioeconomic strata and social classes in society often account for differences, inequalities and gaps in cognitive test points of children. By the same token, the current study referred to the family investment model and the family stress model to explain differences, inequalities and gaps in children's educational performance based on socioeconomic status (SES) or social class. The study first defined and then tested the empirical expectations of the family investment model and the family stress model utilizing data from four sweeps of the Millennial Cohort Study (MCS), which examined a nationally representing sample of nearly 19,000 children. The direct and indirect impacts of the behavior of parents from a specific socioeconomic status or social class were determined and assessed based on cognitive skills and their psychological adjustment of children. The analysis model accounted for between 81 % and 93 % of the influences of social class on acedemic success of children. Children's varying cognitive skills mediated nearly two-thirds of the influences of social class on the educational achievement of children at the age of 7. Children's psychological adjustment, on the other hand, mediated 15 % of the impacts of socioeconomic status or social class on children's educational performance at the age of 7. It was asserted that the mechanisms in the family investment theory and the family stress theory heavily interacted with one another and that a mixed, composite or hybrid model might turn out to be more beneficial. The family investment theory and the family stress theory, with their key concepts, have attempted to explain the observed educational differences between lower and higher socioeconomic status or social classes in society and the SES-based differences, inequalities and gaps in cognitive skills of children.

Since the end of the Second World War, free compulsory education and then secondary school education have become widespread in societies and assumed a coherent pattern of expanding educational attainment as a means to remove social and institutional barriers. In industry and today's society, technical, professional and managerial positions have emerged depending on the level of scientific, technological and economic development, and the number of people in the higher-educated workforce, called white-collar workers, is comparatively on the rise. The increase in educational attainment may result in upward vertical social mobility in society. Benefiting from educational opportunities, individuals from different SES or social class backgrounds may reach technical, professional and managerial positions and may have chances of getting employment in these positions to fulfill the educated workforce needs of the economy through the professions they acquire thanks to their university education (Blossfeld and Shavit, 1993; Breen, 2004). Although educational opportunities for working-class families have improved when compared with the past, inequalities in social class mobility continue to exist on the basis of social class background. Among individuals who are able to reach and work in middle-class positions thanks to their education and occupation, more are from middle- and upper-social-class backgrounds, while fewer are from working-class backgrounds. Parents with middle or upper SES or social class retain their advantage. Parents with lower SES and social class or working-class backgrounds continue to be in a disadvantaged position (Breen, 2004).

How is this steady trend in educational attainment explained on the basis of SES or social class origins? Theorists and researchers have been inclined to accept Boudon's (1974) distinction between primary and second impacts in education. They have indicated factors that influence academic performance as 'primary effects' and asserted that educational choices once made impact the outcome of academic performance as 'second effects'. When we focus only on primary impacts, why are children from less advantaged SES or social class origins less able to exhibit their skills in school?

Sociologists often utilized class subcultural theory to explain why children from less advantaged SES or social class origins exhibited less skill in school. It was asserted here that there were two broad subtypes of class subcultural theory to account for the impact of class subculture on children. First, sociologists asserted that working-class culture affected how children interpreted and responded to the 'dominant' social class culture in school and that they showed 'resistance' to the learning activities generated in the classroom (Willis, 1977; Weis, 1990). Subcultural theory dealt with social class differences in cultural capital across socioeconomic strata and social classes in society (Bourdieu, 1984). Here it was asserted that working-class children considered themselves disadvantaged not only because they did not come from the 'dominant culture' within the education system but also because 'their' culture was not deemed valuable.

It was pointed out that none of the subtypes of the class subcultural theory could provide a satisfactory explanation of why children of working-class parents demonstrated less academic skill. The study aimed to explain why children of working-class parents demonstrated less academic skill not only via evidence of changing in cultural capital (Sullivan, 2001) but also via certain phenomena among some working-class children such as rejecting school values and slowly and gradually becoming detached from school (Archer & Yamashita, 2003). However, it was underlined that children's detachment and withdrawal from school took place earliest in middle childhood and most often in adolescence. Research evidence indicated that children from labouring-class families displayed lower levels of cognitive skill on standardized tests as of nearly the starting of life (Feinstein, 2003) and long before they started behaving in a culturally meaningful manner.

The current research started from and then empirically assessed two theories, namely the family investment theory and the family stress theory, that tried to explain socioeconomic status-based differences, inequalities and gaps in cognitive skills and educational performance through socioeconomic strata or social classes in society. Sociologists stated that the explanatory values

of the family investment theory and the family stress theory had never been directly compared. The research tried to empirically test the comparative value of these different theories, the family investment theory and the family stress, theory in accounting for the lower academic acquisition of children from labouring-class families.

The Role of Economic Resources in Enhancing Cognitive Skills and Educational Attainment of Children: The Family Investment Theory

The family investment theory hypothesized that family resources made a positive contribution to children's development by purchasing materials, experiences and services that were beneficial for promoting, nurturing and enhancing cognitive skills and educational attainment of children. Thanks to family income and purchasing power, SES or social class was able to provide materials, activities, experiences and services that were beneficial for promoting, nurturing, and enhancing children's cognitive abilities and educational attainment. Parents allocated both money and time to their children, which enabled them to make plenty of expenditures and investments to enhance children's cognitive skills and educational attainment, ranging from books and educationally beneficial toys and games to travels to museums and art exhibitions. Parents were engaged with and involved in their children by allocating and spending their leisure as well as their time outside of paid work hours to enhance their cognitive skills and educational attainment. Parental investments in children's education called for allocating and spending not only time but also money to enhance children's cognitive skills and educational attainment. It was asserted that parental education and human capital had an essential part in transferring and passing down cognitive skills and educational gains as advantages from one generation to the next (Becker, 1993).

Annette Lareau extensively discussed in her study that parents allocated, spent and invested both time and money in their children's education in order to encourage, nurture and enhance their cognitive skills and educational attainment (Lareau, 2006). Lareau asserted that parents of middle SES or

middle social class often applied a 'concerted cultivation' strategy for their children. Parents in middle SES or middle social class were often able to exploit their children's time with activities that contributed to their cognitive and educational development, such as reading with their children and playing games that would improve their reading, numerical and analytical skills, along with educational and enriching activities such as participating in dance, drama or sports events. Working-class parents were often able to implement a strategy of 'natural growth' and left children to play by themselves in an unstructured manner or to engage in activities of parents. The study demonstrated that while excessively cultivation could occasionally be a evil chose, engaging children in structured activities as opposed to free play was positively linked with both better academic performance and improved school orientation (McCoy, Byrne, & Banks, 2012).

While parents were able to explicitly, sometimes deliberately, consciously and purposefully, teach many skills to their children, some parents taught them less. Executive function skills, and especially planning skills, were regarded as essential 'soft skills' that could be developed via children's interactions with adults (McCormack and Atance, 2011). Likewise, it was underlined that cultural skills and characteristics such as speech and language skills and vocabulary played a part and laid the groundwork for children's literacy. On the flip side, economists have started to deal with the characteristics often referred to as 'non-cognitive characteristics' starting from the 1970s. They have asserted that, in effect, 'soft skills' such as being patient, determined, persistent and self-disciplined can be a determinant of income and labor market success, and are just as significant as, if not more significant than, cognitive abilities. The growing evidence has confirmed the significance of cognitive skills and non-cognitive traits and is beginning to show how and to what extent the family environment can shape both cognitive skills and 'soft skills' including patience, determination persistence and self-discipline as dimensions of an individual's personality (Osborne Groves, 2005).

Psychosocial Processes in Developing Children's Cognitive Skills and Educational Attainment: The Family Stress Theory

The family stress model was originally developed to explore the impacts of poverty and financial challenges that came about with the Great Depression of capitalism in 1929, as well as a serious nuisance in the surpassing agricultural sector in the 1980s, on families (Conger & Conger, 2002). The family stress theory posits that persistently less, unsteady or insufficient income brings about economic pressures and strains in the family and that these pressures can lead to psychological stress and tension in parents (Conger and Conger, 2002), which may, in turn, heighten the risk and danger of demoralization, psychological distress, anxiety and substance use among parents. It has been suggested that such difficulties can eventually give rise to more spousal conflict and decreased interparental warmth. Parental conflict, coupled with poor mental health, might lessen parental warmth and sensitivity or escalate parental severity and inconsistency, thus reducing the quality of child socialization, education and rearing. In the final phase of the family stress model, the disrupted behavior of parents might heighten the risk and danger of not only internalizing problems in children, such as demoralization, distress and symptoms of anxiety, but also externalizing problems, such as disruptive behavior and hyperactivity. Then, children's mental health might make an impact on their relationships with peers and other people around them, such as teachers, who have certain effects and specific consequences as far as their educational experiences and development are concerned. The family stress model posits that the influence of SES or social class on children's psychological adjustment is indirect through parental experiences of economic pressures and strain as well as psychological distress.

A Mixed, Composite and Hybrid Model of the Family Investment Model and the Family Stress Model

The family stress model aims to explain the association between the social and economic status of parents and children's educational performance from a psychological and social point of view. The model attaches great

importance and gives priority to children's behavior in the classroom as an extremely significant mechanism impacting educational performance. Theorists and researchers have proposed a mixed, compositr or hybrid model that establishes a link between the hypotheses put forward by the family investment model and those put forward by the family stress model through the influences of psychosocial stress on children's brain development (Blair, 2010). The family stress model has demonstrated how the impacts of psychological stress on children's glucocorticoids and catecholamine levels influence children's experiences and then the development in several brain regions, and particularly how and to what extent this is related to executive function, emotional and behavioral control and analytical considering. Also, it has been noted that comprehending and explaining the associations among the mechanisms at the center of the family stress model, namely poverty, stress and development, has implications for the enhancement of children's cognitive skills (Blair, 2010).

Determining the Hypotheses of the Study

The hypothesis put forward by the family investment model posits that family resources impact children's educational performance via parental investments made by allocating and spending both time and money for education of children, which eventually creates an impact on cognitive development and skill attainment of children. The hypothesis of the family stress theory postulates that family income has an influence on development and educational performance of children by determining whether parents suffer economic pressure and strain, demoralization and psychological distress, thus leading to deterioration of parent-child ties and poorer parental behaviors concerning socialization, education and child-rearing. Considering and deliberating over a narrow interpretation of the hypotheses, children's psychological adjustment has been regarded as a predominantly mediating variable for the family stress model. The hypothesis put forward by the family investment model, on the other hand, pertains to cognitive skills of children. Nevertheless, as stated before, it has been alleged that family stress model

processes most presumably have an influence not only on cognitive development of children but also on the cognitive skills they display.

Certain hypotheses were proposed in this study:

(1) It was assumed that variation in educational performance based on the family's socioeconomic status or social class would be mediated by children's cognitive skills (Family investment model hypothesis).

(1a) It was expected that family resources including income and 'investment' activities such as spending time and money on children's education, would determine children's educational performance via their cognitive skills.

(2) It was assumed that variation in educational performance based on family socioeconomic status or social class would be mediated by children's psychological regulating (Family stress model hypothesis).

(2a) The family's psychosocial environment, including mental health of parents, distress of mother and association with spouse, and maternal warmth/hostility, was expected to determine children's educational performance through their psychological adjustment.

Nonetheless, the influences of socioeconomic status or social class on children's educational performance are most presumably mediated through both children's cognitive skills and their psychological adjustment.

(3) It was assumed that variation in educational achievement based on family SES or social class would be mediated through both children's cognitive skills and children's psychological regulating.

(3a) The family's psychosocial environment, including mental health of parents, distress of mother and association with spouse, and maternal warmth/hostility, was expected to determine children's educational performance through both children's cognitive skills and their psychological regulating. Parental investment and resources associated with education of

children, such as family income and activities with children, were assumed to determine children's educational achievement through both children's cognitive skills and their psychological regulatıng.

Data and Methods in the Study

Sample

The Millennium Cohort Study was conducted with a large, representative sample of around 19,000 children and their families. In this longitudinal study, the first contact and interview with the children and their families was made when they were 9 months old. The children and their families were interviewed over the years as the children grew older: at age 3 in the second sweep of the study, at age 5 in the third sweep, and at age 7 in the fourth sweep. Data were collected over 11 years, but the dependent variable was gauged and assessed at 7 years, so that only a quarter of the data from the sweeps were used. The children were observed and the mothers participated in the study. Only one of the twins or triplets in the family was included in the study. The sample size at the start was 18,552 and dropped to 15,588 in Sweep 2, to 15,246 in Sweep 3 and to 13,857 in Sweep 4. Of the original target sample size, 57 % were included and represented in Sweep 4 of the study. It was expressed that the missing sample was presumably family members who had moved between different sweeps of the study, especially those in the lowest income groups (Plewis, 2007).

Dependent Variables in the Study

Children's Educational Performance

Children's academic performance was obtained through teachers' evaluation of children's cognitive skills and educational gains based on the teacher questionnaire in the fourth sweep of the study. Teachers were requested to evaluate children's cognitive skills and educational gains at a mean age of 7 by responding to questions related to speaking, listening, reading, writing, math and physical education. The evaluations of teachers on

cognitive skills and educational gains of children were coded and rated on a five-point scale from 'well below average' to 'well above average'. Three scales were utilized here to measure academic performance in the domains of reading, writing and math.

Mediating Variables in the Study

Children's Psychological Adjustment

The Strengths and Difficulties Questionnaire (SDQ) was used to establish if children were psychologically adjusted (Goodman, 1997). The SDQ is a 25-item behavioral browsing survey developed to detect and assess children's sentimental sanitary and problematic behaviors. Four subdivision of difficulties scales were generated to provide judgments about the 'total score' employed here. Data on children's psychological adjustment were collected at the ages of 3, 5 and 7 and were utilized in the analysis to constitute a potential structure of children's psychological regulating. To enable comment of mediating impacts, the SDQ points for each year were reversed in such a manner that higher points now denoted fewer behavioral difficulties.

Chidren's Cognitive Skills

Children's cognitive skills were evaluated in the third sweep of the study using the subscales of the British Ability Scales test for picture similarity and pattern formation at age 5 (Elliot, Smith, & McCulloch, 1997) and thus data on children's cognitive skills were collected. In the procedure for the picture similarities assessment, children were demonstrated four pictures lined up in a row and given a fifth picture on a card. They were then instructed to put the card below the picture with which it shared a similarity. Children's problem-solving skills were measured using the pattern construction assessment. Moreover, although appropriate for the current study, the Naming Vocabulary scale was not used since it would be significantly impacted by the parents' social class culture in the same way as oral expression and reading skills.

The analysis was conducted on the basis of normative BAS points obtained from the standard British the British Ability Scales (BAS) tables and described according to the standardized samples employed in improving the evaluations. These points were then transformed to T-points as per values in the standardized sample for the feasible age band. T-points were between 20 and 80 with a mean value of 50. Children with T-points in the 50s would therefore be assigned to an average value based on their ages. Higher scores pointed to an enhance in cognitive skills and in contrast to, lower points demonstrated a declining level of cognitive skills.

Independent Variables in the Study

Socioeconomic Status or Social Class of Parents

The socioeconomic status or social class of the parents was determined in the fourth sweep of the study when the children were 7 years old. The parents' SES or social class was measured and assessed using the European Socioeconomic Classification (ESeC), which was built on Erikson-Goldthorpe's social class scheme, and information was obtained from the primary participants. The ESeC was constructed on the theoretical foundation and support of Erikson-Goldthorpe's social class scheme and was designed to compare social classes (Rose and Harrison, 2007). The study utilized five-social class positions of Erikson-Goldthorpe's social class scheme to display the socioeconomic strata and social classes in society.

(1) Large proprietors, capitalists, high-grade professionals in senior professional and managerial positions (salaried employees)

(2) Employees in intermediate jobs and professions (higher-ranking white-collar workers)

(3) Self-employed and small proprietors (petty bourgeoisie or self-supporting workers)

(4) Workers in lower supervisory positions, technical and sales jobs (lower-ranking white-collar workers)

(5) Workers in routine jobs (semi-skilled and unskilled)

In order to establish the socioeconomic status or social class of the family, the study focused on nuclear families, the majority of which consisted of parents and children. The unemployed and those between jobs were grouped according to their last professional status.

Family Income

The study used family income as a measure of parents' ability to invest in their children. To determine the net family income, the main respondents were asked a number of questions on diverse income resources of all the family members and the OECD equivalence scale was used for the equivalisation of the obtained information. Data obtained from the main study sweeps were used for all available data.

Variables in the Family Investment Model

The researchers measured and assessed the variables of out-of-school parental assistance in reading, writing and math skills at 5 years of age in the third sweep of the study. The variables for frequency of parental activities and practices such as taking children to a library at age 3, reading to children or reading with children, helping them count, doing musical activities with children, and coloring and painting were measured and assessed in the second sweep of the study using a six-point scale from 'never' to 'every day'. In the analysis, the researchers used the average weekly hours children spent watching TV in the second sweep as a reverse measure of investment in children.

Variables in the Family Stress Model

The researchers measured and assessed parents' psychological distress in the third wave of the study employing the Kessler Six (Kessler et al., 2002). Mothers reported on a scale 'how often everything they did in the past and during the last 30 days was a worthless and irritable effort and how often they felt demoralization, desperation, anxiety or unrest'. Hostile and severe

behavior in socialization, education and child-rearing was measured in the third wave of the study using items from the Strauss Conflict Tactics Scale (CTS) (Strauss & Hamby, 1997) regarding the frequency of slapping and shouting at children. In the second wave of the study, nine items from the HOME observation scale (Cadwell & Bradley, 1984) filled out and completed by interviewers were administered to measure and assess maternal warmth. These items associated with maternal warmth assessed mother-child interactions, such as praising them, engaging in positive parent-child interaction, as well as touching and making warm physical contact with them. In the third wave of the study, the researchers administered a seven-item scale, a varied version of the Golombok Rust Inventory (GRIMS), to measure and assess the frequency and intimacy of the mother-father association as well as the general quality of the couple's marital status in a household where the parents lived with their children (Rust et al., 1990),

Child, Mother and Household Control Variables in the Study

Maternal age was integrated into the analysis as a consecutive integer. Children's temperament was measured and assessed employing the mood subscale of Temperament Scale of Infant (Carey & McDevitt, 1978) in the first wave of the study. Children's temperament correlated strongly with those reported in the Strengths and Difficulties Questionnaire.

Schools and Teachers Control Variables in the Study

Because the measure of children's educational performance was reported by teachers themselves, the characteristics of schools and teachers were likely to influence the assessment of children. Teachers' experience was measured as the number of years of schooling, separated into three groups of < 6, < 20 and 20+. Data from the Millennium Cohort Study provided evidence on whether schools were in the highest quartile employing the Oxford Indicator of Child Poverty or in the area. Impoverished field status was measured employing a dummy variable. Researchers realized 8,876 interviews

with teachers and collected knowledge on the three educational assessments. 8,667 interviews were employed in the survey.

Strategy for Analyzing Research Data

Firstly, the study primarily examined whether two variables, children's cognitive skills and children's psychological adjustment, mediated the influences of parental socioeconomic status or social class on children's educational performance. When these two variables mediated the said impacts, it was discussed that this was in direct contrast to the subcultural theories of social class dealt with in the introduction. In particular, the study tested whether two variables, children's cognitive skills (COG) and children's psychological adjustment (SDQ), mediated the influences of socioeconomic status or social class (CLASS) on children's educational performance (EDUC). Data on children's psychological adjustment were collected, measured and assessed using the SDQ. Implementation of a mediation analysis was based on the need for measuring and assessing not only the direct impacts of parents' social class on children's educational achievement but also its indirect effects via cognitive skills of children as well as the Strengths and Difficulties Questionnaire of children. The analysis was performed by assessing both equations estimating the influences of social class (CLASS), children's cognitive abilities (COG), and children's psychological adjustment (SDQ) and also an equation to predict children's educational achievement (EDUC) as a function of socioeconomic status or social class (CLASS), children's cognitive abilities (COG) and children's psychological regulating (SDQ). Exposing and obtaining the products of the standardized impacts of social class (CLASS) on children's cognitive abilities (COG) and children's psychological adjustment (SDQ), together with the standard errors related to the estimates of the indirect effects, generated the indirect influences of social class (CLASS) on children's educational performance (EDUC) through children's cognitive abilities (COG) and their psychological adjustment (SDQ).

Secondly, the study tested the family investment theory and the family stress theory by exploring the direct and indirect impacts of each model on

children's educational performance (EDUC) through children's cognitive skills (COG) and children's psychological adjustment (SDQ). The family investment model and the family stress model were estimated and assessed using a mixed, composite or hybrid model with and without the mediating variables of children's cognitive skills (COG) and their psychological adjustment (SDQ). The initial test of the two models caused the regression coefficients of social class to decrease.

Children's cognitive skills (COG), psychological regulation (SDQ) and educational performance (EDUC) were measured and assessed in the study using a set of different items for each domain. This constituted the two parts of the mediation model, namely a measurement model and a structural model, and offered the possibility of using a Structural Equation Model (SEM) framework. Hence, dependent variables including children's cognitive skills (COG), children's psychological adjustment (SDQ) and children's educational performance (EDUC) estimated the net measurement error creating better accuracy.

In order to facilitate and enable comparison of hypotheses, seven models estimating children's educational performance (EDUC) were identified and emphasized:

1. Socioeconomic status or social class (CLASS) alone generated the greatest direct influence of social class (CLASS) on children's educational performance (EDUC).

2. Socioeconomic status or social class (CLASS) and control variables.

3. Predictors of the family investment model-social class (CLASS) and predictor variables of the family investment model

4. Predictors of the family investment model and children's cognitive ability (COG) - socioeconomic status or social class (CLASS), predictor variables of the family investment model and children's cognitive ability (COG)

5. Predictors of the family stress model-socioeconomic status or social class (CLASS) and predictor variables of the family stress model.

6. Predictors of the family stress model and children's psychological adjustment (SDQ) - socioeconomic status or or social class (CLASS), family stress model predictors and children's psychological adjustment (SDQ).

7. Full model-social class (CLASS), children's cognitive abilities (COG), children's psychological adjustment (SDQ), family investment model predictors, family stress model predictors and control variables.

Tablo1 Descriptive data

Variable	N	Mean	Standard deviation	Minimum	Maximum
Dependent variable					
Teachers' estimating reading performance of children (1–5)	8,667	3.30	1.05	1	5
Teacher' estimating reading performance of children (1–5)	8,667	3.04	1.00	1	5
Teacher' estimating reading performance of children (1–5)	8,667	3.24	0.95	1	5
Mediating variables					
Children's psychological adjustment (wave 2)	8,667	58.11	6.82	0	71
Children's psychological adjustment (wave 2)	8,667	50.47	5.16	0	64
Children's psychological adjustment (wave 2)	8,667	54.13	5.07	0	64
Children's the British ability scales picture similarity test outcomes	8,667	56.00	9.96	20	80
Children's the British ability scales pattern formation test outcomes	8,667	51.03	9.64	20	80
Independent variables					
Parents who work in professional and managerial positions and occupations	3,166	0.37	0.48	0	1

Parents who work in Intermediate positions and occupations	854	0.10	0.30	0	1
Parents who work in self job	1,039	0.12	0.32	0	1
Parents who work in supervisory/technical/sales domains	2,269	0.26	0.44	0	1
Parents who work in routine vocations or jobs	1,339	0.15	0.36	0	1
Parents in lowest income groups	1,500	0.17	0.38	0	1
Parents in second income groups	1,549	0.18	0.38	0	1
Parents in fourth income groups	1,867	0.22	0.41	0	1
Parents' frequency of visiting library their children at age 3	8,667	1.99	1.26	1	5
Parents' frequency of teaching alphabet their children at age 3	8,667	3.98	2.37	1	8
Parents' frequency of teaching counting their children at age 3	8,667	5.96	2.23	1	8
Parents' frequency of teaching songs their children at age 3	8,667	6.22	2.19	1	8
Parents' frequency of painting and drawing with their children at age 3	8,667	5.91	2.10	1	8
Parents' frequency of reading with or to their children at age 3	8,667	5.27	1.09	1	6
Children' mean daily of TV viewing at age 3 years	8,667	2.92	0.63	1	4
Parents' frequency of help with reading their children at age 5	8,667	0.98	0.15	0	1
Parents' frequency of help with writing their children at age 5	8,667	0.91	0.28	0	1
Parents' frequency of help with maths their children at age 5	8,667	0.93	0.24	0	1
Anxiety and depression of mothers	8,667	1.53	0.67	1	5
Hostility of mothers	8,667	2.39	0.68	1	5

Warmth of mothers	8,667	0.80	0.29	0	1
Parents who have less-quality association between partners	2,678	0.31	0.46	0	1
Parents who middle-quality association between partners	1,595	0.27	0.44	0	1
Parents who have higher-quality association between partners	2,164	0.17	0.37	0	1
Control variables					
Mothers who have primary education	979	0.11	0.32	0	1
Mothers who lower secondary education	2,994	0.35	0.48	0	1
Mothers who upper secondary education	1,561	0.18	0.38	0	1
Mothers who third level education	3,132	0.36	0.48	0	1
Mothers who employ in job	5,644	0.65	0.48	0	1
Mother in unemployed position	146	0.02	0.13	0	1
Mothers inactive	2,877	0.33	0.47	0	1
Temperament of children	8,667	19.21	3.46	5	34
Female child					

(Layte, 2017, p. 495)

Serving as a baseline of Model 1, Models 1 and 2 generated a great direct influence of social class (CLASS) on educational success of children (EDUC). Models 3-7 allowed us to measure and assess the increase in the total variance elucidated and the decrease in the regression coefficient of socioeconomic status or social class with the adding of different groups of variables, and also to make a comparison between the theories and specific hypoıtheses of the family investment theory and the family stress theory.

Results

Direct and Indirect Impacts of Predictors in the Family Investment Theory and the Family Stress Theory

Table 3 displays the direct impacts of different predicting variables stated as unstandardized regression coefficients with their standard errors and significance levels on children's cognitive skills (COG), children's psychological adjustment (SDQ) and children's educational performance (EDUC). All other socioeconomic strata or social classes were negatively associated with children's cognitive skills (COG), children's psychological adjustment (SDQ) and children's educational performance (EDUC) when compared with professional and managerial classes. Both children's cognitive skills (COG) and children's psychological adjustment (SDQ) had significant direct impacts on children's educational performance. The direct impact of children's cognitive skills (COG) on their educational performance was 0.11 as a coefficient, whereas the direct impact of children's psychological adjustment (SDQ) on their educational performance was 0.03 as a coefficient. In comparison with children's psychological adjustment (SDQ), children's cognitive skills (COG) had a nearly four times larger direct impact on their educational performance. Table 3 presents evidence of a significant and graduated association among family income, children's cognitive ability, and children's psychological regulatıng or the strengths and difficulties questionnaire, indicating that family income plays an important role in shaping children's cognitive ability and children's psychological regulating. Nevertheless, only the two lowest income groups had an important negative asssociation with educational evaluations of children.

Table 2. Structural equation model' goodness-of-fit statistics

Variables participated	RMSEA	CFI	TLI	AIC	BIC	CD	Overall R^2	LL
1. Social class or socioeconomic status alone	0.015	0.999	0.999	76,763.2	76,855.1	0.080	0.08	-38,369
2. Social class + controls	0.04	0.964	0.945	247,597.4	247,858.9	0.175	0.17	-123,740
3. Family investment Model predictors	0.014	0.997	0.996	310,828.0	311,018.8	0.154	0.15	-155,387
4. Family investment model and children's cognitive skills	0.031	0.974	0.962	509,931.3	510,291.8	0.223	0.22	-254,915
5. Family stress model predictors	0.01	0.999	0.998	137,923.0	138,057.3	0.112	0.11	-68,943
6. Family stress model and children's psychological adjustment	0.023	0.993	0.988	293,425.7	293,701.3	0.264	0.26	146,674
7. Full model	0.028	0.943	0.916	871,266.6	872,432.7	0.560	0.56	435,468

(Layte, 2017, p. 497).

Other variables in the family investment model had crucial impacts in the predicted direction. The frequency of parents' taking their children to the library, teaching them the alphabet, teaching them songs, and especially reading boks to them had a significant positive association with children's cognitive skills (COG). On the other hand, the frequency of parents' painting, drawing and reading with their children had a positive association with children's psychological adjustment (SDQ). All of the practices and activities that parents undertook for their children, such as visiting a library at the age of 5, teaching the alphabet and providing help with reading, were positively associated with children's educational performance or with teachers' educational evaluations of children at school. Surprisingly, there was a positive

relationship between the average daily hours children spent watching TV and children's cognitive abilities (COG) and their educational performance (EDUC), which was consistent with other factors.

Table 3. Structural equation model direct impacts-unstandardized coefficients

Variable	Children' cognitive ability		Children'psychological adjustment		Children'educational success	
	Coefficient	*P*-value	Coefficient	*P*-value	Coefficient	*P*-value
Children' cognitive developing					0.11	***
Children' psychological adjustment					0.03	***
Social class variables						
Parents who work in professional and managerial positions and occupations	Reference		Reference		Reference	
Parents who work in intermediate positions and vocations	- 0.39	n.s	0.08	n.s	- 0.02	n.s
Parents in self-employed and small employer positions	- 0.37	*	- 0.21	n.s	- 0.07	n.s
Parents who work in supervisory/technical/sales domains	- 0.81	***	- 0.45	**	- 0.04	n.s
Parents who work in routine vocations	- 0.43	***	- 1.25	***	- 0.06	n.s
Family investment model predictors						
Parents in lowest income groups	- 1.07	***	- 1.15	***	- 0.13	***
Parents in second income groups	- 0.76	***	- 0.64	***	- 0.10	**
Parents in third income groups	- 0.56	**	- 0.35	*	- 0.06	n.s
Parents in fourth income groups	- 0.52	**	- 0.22	n.s	- 0.04	n.s
Parents in highest income groups	Reference		Reference		Reference	
Parents' frequency of visiting library their children at age 3	0.29	***	0.06	n.s	0.02	*
Parents' frequency of teaching alphabet their children at age 3	0.13	***	- 0.04	n.s	0.01	***

Parents' frequency of teaching counting their children at age 3	- 0.02	n.s	- 0.01	n.s	0.01	n.s
Parents' frequency of teaching songs their children at age 3	0.07	*	0.01	n.s	- 0.01	n.s
Parents' frequency of painting with, their children at age	0.02	n.s	0.05	*	0.00	n.s
Parents' frequency of reading with or to their children at age 3	0.45	***	0.24	***	0.01	n.s
Children' average hours daily of TV viewing at age 3	0.19	*	- 0.11	n.s	0.06	***
Parents' frequency of help with reading their children at age 5	0.73	n.s	0.26	n.s	0.14	*
Parents' frequency of help with writing their children at age 5	0.23	n.s	0.50	**	0.04	n.s
Parents' frequency of help with maths their children at age 5	- 0.34	n.s	- 0.18	n.s	- 0.04	n.s
Family stress model predictors						
Hostility of mothers	- 0.01	n.s	- 0.67	***	- 0.01	n.s
Warmth of mothers	1.29	***	0.99	***	- 0.06	n.s
Parents who have less-quality association	- 0.19	n.s	- 0.73	***	- 0.03	n.s
Parents who have middle-quality association	- 0.07	n.s	- 0.09	n.s	- 0.02	n.s
Psychological distress of mothers	- 0.28	***	- 1.27	***	0.02	n.s
Control variables						
Mothers who have primary education	- 2.28	***	- 1.56	***	- 0.07	n.s
Mothers who have lower second education	- 1.28	***	- 0.60	***	- 0.04	n.s
Mothers who have upper second education	- 0.94	***	0.03	n.s	0.01	n.s
Mothers who have third level education	- 1.06	***	- 0.64	**	- 0.12	*
Mother employed	Reference		Reference		Reference	
Mothers in unemployed poistion	- 0.03	n.s	- 0.33	n.s	0.00	n.s
Temper of children	- 0.01	n.s	0.06	***	- 0.01	**
Female child	0.44	***	0.17	n.s	0.16	***
Male child	Reference		Reference		Reference	
Chronic illness of children	- 0.46	***	- 0.85	**	0.05	n.s
Children who have mental and behavioural chronic disease	- 1.71	***	- 4.75	***	- 0.33	***

Children who have low birth weight at birth	- 0.69	***	- 0.69	**	- 0.13	***
Weeks lack from school	- 0.08	***	- 0.17	n.s	- 0.03	*
Hearing difficulties of children	- 0.85	***	- 0.47	***	- 0.02	n.s

Note: n.s, not significant; *P <0.05; **P <0.01; ***P <0.001. (Layte, 2017, p. 499)

Table 4 depicts that these direct impacts are demonstrated through children's psychological adjustment and cognitive skills as part of the indirect effects of SES or social class. As might be expected, lower family income had an adverse impact on children's educational performance. Parental practices and activities such as taking children to the library, teaching them the alphabet, performing musical activities with them and reading to them or reading with them were positively associated with children's educational performance. These impacts lent some support to Hypothesis 1a, which posited that family 'investment' activities that involved allocating and spending both time and money on children's education would determine children's educational performance through their cognitive skills.

An examination of the predictors in the family stress model revealed that the variables had no direct impacts on children's educational performance, but all of these variables had a crucial impact on psychological regulating of children in the hypothesized direction. When compared with the other variables in the model, maternal psychological distress had a specifically substantial adverse impact on children's psychological adjustment. This was followed by the effect sizes of maternal warmth and maternal hostility on children's psychological adjustment. Table 4 displayed that these direct impacts were transformed into important indirect impacts backing up Hypothesis 2a. Counter to the limited comment of the family stress model hypothesis, some of the variables in the family stress model revealed direct effects on children's cognitive skills and indirect effects on children's educational performance through this mediation. Both maternal warmth and distress had strong indirect impacts through this pathway. Compared with the impact of maternal warmth through children's psychological adjustment, the

indirect effect of maternal warmth through children's cognitive skills was indeed observed to be only marginally larger.

Direct Effects of Control Variables in the Study

As depicted in Tables 3 and 4, a lot of the control variables in the study had significant direct and indirect influences on educational achievement of children. Not surprisingly, maternal education was observed to be highly significant with larger impacts on children's cognitive skills when compared with socioeconomic status or social class and income. Nevertheless, maternal education had a more reduced direct influence on psychological regulating of children. This effect was still important and had no direct influence on children's educational achievement once the children's cognitive skills and psychological regulatıng were familiarized and established. Yet as expected, maternal education here had a highly immense indirect effect on children's educational performance through children's cognitive skills. When children had more 'difficult' temper, mental and behavioral conditions, low birth weight and were lack from school for weeks, all these generated negative direct effects on educational achievement of children.

What Mediates the Influences of Social Class?

As demonstrated in Table 3, the coefficients for the factors affecting the outcome for different socioeconomic strata and social classes in society significantly and negatively predicted children's cognitive skills when compared with the coefficients for the professional and managerial classes. Compared with the professional and managerial classes, only all other socioeconomic strata and social classes were exposed to and experienced significantly worse cognitive skills of 7-year-old children. It was observed that among socioeconomic strata and social classes, parents working in supervisory, technical, and sales jobs and occupations had the greatest adverse impacts on children's cognitive skills; whereas parents working in routine jobs and occupations as well as those who were unemployed had the worst influence on children's cognitive skills, The impact of parents working in

routine jobs and occupations on children's cognitive skills were three times greater than the impact generated by parents working in intermediate jobs and occupations.

Table 4 The indirect impact of predictors on children's educational achievement via cognitive competence and psychological adjustment of children (unstandardized coefficients)

Variable	Coeffic ient	*P*-value		Coeffic ient	*P*-value
Social class variables			**Family stress model predictors**		
Parents who work in professional and managerial positions and occupations	Refer-ence		Hostility of mother	- 0.02	*
Parents who work in clerical and administrative positions	- 0.04	n.s	Warmth of mother	0.17	***
Self-employed and small employer	- 0.05	*	Low-quality relationship	- 0.04	*
Parents who work İn supervisory, technical, and sales domains	- 0.10	***	Parents' moderate-quality association	- 0.01	n.s
Parents who work in routine occupations or jobs	0.20	***	Parents' missing quality of association	- 0.08	**
Family investment model predictors			Psychological distress of mother	- 0.07	***
Parents in lowest income groups	- 0.15	***	**Maternal and child control variables**		
Parents in second income groups	- 0.10	***	Mother who have education primary	- 0.30	***
Parents in third income groups	- 0.07	***	Mother who have education lower second	- 0.16	***
Parents in fourth income groups	- 0.06	***	Mother who have education upper second	- 0.10	***
Parents' frequency of visiting library their children at age 3	0.03	***	**Education third level of mother**	Refere nce	
Parents' frequency of teaching alphabet their children at age 3	0.01	***	**Mother employed**	Refere nce	
Parents' frequency of teaching counting their children at age 3	0.00	n.s	Unemployed	- 0.01	n.s
Parents' frequency of teaching songs their children at age 3	0.01	*	Inactive	-0.01	n.s

Parents' frequency of painting with their children at age 3	0.00	n.s	Temperament of children	0.00	n.s
Parents' frequency of reading with or to their children at age 3	0.06	***	Female child	0.05	***
Children' mean daily of TV-viewing at age 3	0.02	n.s	**Male child**	Refere nce	
Parents' frequency of help with reading or to their children at age 5	0.09	*	Chronic illness of children	- 0.08	***
Parents' frequency of help with writing their children at age 5	- 0.04	n.s	Children' mental and behavioural chronic illness	- 0.33	***
Parents' frequency of help with maths their children at age 5	- 0.04	n.s	Children' low birth weight at birth	- 0.10	***
			Children' weeks absent from school	- 0.01	n.s
			Children' hearing difficulties	- 0.11	***

Note: n.s, not significant; *P <0.05; **P <0.01; ***P <0.001. (Layte, 2017, p. 500).

Likewise, Table 3 depicts a like pattern for children's psychological regulating, except that there is no important negative impact for medium or self-employed social strata and classes when compared with parents who work in professional and managerial vocations, occupations and positions or classes. As indicated by the little, non-moderate and insignificant impacts of all other socioeconomic strata and social classes compared with professional and managerial classes, it was pointed out that there was no important direct influence impact of social class on children's educational success once an adjustment was made for the impact of children's cognitive skills and children's psychological adaptation on their educational performance. This result was deemed important as it indicated that the factors involved in children's educational performance all became active and instrumental through children's cognitive skills and psychological adjustment.

Table 5. Indirect impacts of social class on children's educational success

Socioeconomic status or social class	Per cent of indirect via children's cognitive skills	Per cent of indirect via psychological adjustment of children	Per cent of indirect overall
Parents who work in professional and managerial positions and occupations	Reference	Reference	Reference
Parents who work in clerical and administrative positions and occupations (per cent)	65.8	3.5	69.3
Parents in self-employed and small employer positions (per cent)	34.9	5.1	40.0
Parents who work in supervisory, technical, and sales domains (per cent)	67.1	9.8	76.8
Parents who work in routine and unclassifiable positions and occupations (per cent)	63.9	14.8	78.7

(Layte, 2017, p. 501)

The analysis asserted that children's cognitive skills, rather than their psychological adjustment, mediated the total influence of socioeconomic status or social class on children's educational performance. The percentage of the total influence of social class on children's educational performance that was mediated through children's cognitive skills, rather than their psychological regulating, was measured employing the indirect effects depicted in Table 4. The results for such a measurement are presented in Table 5, and children's cognitive skills mediated the influences of social class on children. Children's cognitive skills were highlighted as a variable that mediated the impacts of social class on children by far more than the impacts of social class on children. Children's cognitive skills accounted for between 35 % and 67 % of the impacts of social class on children. The family stress model most generally referred to and made use of children's psychological adjustment as a basic mechanism. The percentage of children's psychological regulating that mediated the influences of social class on children was the highest in families with parents in routine jobs and occupations as well as unclassified or unemployed parents. Nonetheless, two-thirds of the influences

of social class positions on children of parents working in routine jobs and occupations as well as unclassified or unemployed parents were mediated through children's cognitive skills. These results implied that children's cognitive skills mediated a higher percentage of the influences of social class as compared with children's psychological adjustment. However, children's psychological adjustment mediated almost one-fourth of the influences of social class. Table 3 explicitly demonstrated that family stress model processes, such as warmth and hostility of mother, created a direct impact on children's cognitive skills. The fact that psychological processes of family stress model, such as mothers' warmth and hostility, directly impacted children's cognitive skills lent support to Hypothesis 3a, which put forward that both family stress model processes and family investment model processes would influence social class variations in cognitive skills of children.

Table 6. Direct impacts of social class on children's educational achievement and per cent diminishing in this coefficient by the adding of variables

	Model number						
	1	2	3	4	5	6	7
	Unstandardized direct impacts of CLASS on EDUC						
Parents who work in professional and managerial positions and occupations	Reference						
Parents who work in clerical and administrative positions and occupations (per cent)	- 0.22	- 0.11	- 0.11	- 0.06	- 0.19	- 0.18	- 0.02
Parents in self-employed and small employer position (per cent)	- 0.35	- 0.17	- 0.16	- 0.10	- 0.30	- 0.25	- 0.07
Supervisory, Technical, and Sales (per cent)	- 0.47	- 0.21	- 0.25	- 0.14	- 0.38	- 0.31	- 0.04
Parents who work in routine and unclassifiable positions and occupations (per cent)	- 0.77	- 0.35	- 0.43	- 0.21	- 0.61	- 0.47	- 0.06
	Proportion diminishing in direct impacts of CLASS on EDUC						
Parents who work in clerical and administrative vocations and poistions	100.0	51.4	50.0	74.7	14.6	20.9	92.3

(per cent)							
Parents in Self-employed and small employer poistions (per cent)	100.0	50.6	55.2	70.5	13.4	29.4	81.2
Parents who work in supervisory, technical, and sales domains (per cent)	100.0	54.2	46.7	69.6	19.5	34.1	91.3
Parents who work in routine and unclassifiable positions and occupations (per cent)	100.0	54.8	43.8	72.8	20.8	39.5	92.5

(Layte, 2017, p.501)

Model number

1	Social class (CLASS) alone (provides the great direct impact of social class (CLASS) on children's educational performance (EDUC).
2	Social class (CLASS) and control variables.
3	Family investment model' predictors – social class (CLASS) - family investment model' predictor variables
4	Family investment model' predictors and children's cognitive skills (COG) – social class (CLASS), family investment model' predictor variables and children's cognitive skills (COG)
5	Family stress model' predictors – social class (CLASS) and family stress model' predictor variables
6	Family stress model' predictors and children's psychological adjustment (SDQ) - social class (CLASS), family stress model' predictor variables and children's psychological adjustment (SDQ)
7	Full model- social class (CLASS), children's cognitive skills (COG), children's psychological adjustment (SDQ), family investment model' predictors, family stress model' predictors and control variables

(Layte, 2017, p.501)

Table 6 illustrates the reduction in the socioeconomic status or social class coefficients determined in the seven models. When compared with a model that predicted children's educational achievement as a function of socioeconomic status or social class alone, the full model caused the socioeconomic status or social class coefficients to decrease by 81 % to 93 %, thus making them statistically insignificant. In other words, the full model accounted for approximately 7 % of the variance between the parents in professional and managerial positions and those working in routine jobs and occupations. Evidently, when children's cognitive skills were incorporated into the model (Model 4), it explained a greater part of the social class

differences, inequalities and gaps alone by 80 % to 75 %. The family investment model predictors, on the other hand, accounted for between 44 % and 55 % of the social class differences, inequalities and gaps.

Conclusion and Discussions

Sociologists addressed and investigated the associations between parental social class and educational performance of children in a broad range of theoretical and empirical studies. Firstly, the results obtained from the modeling process explicitly mediated the impacts of SES or social class more as compared with children's psychological adjustment. Nevertheless, it was evidently emphasized that this did not provide precisely obvious, tangible or complete support for the family investment model hypothesis over the family stress model hypothesis. Both family investment model predictors and the family income had important impacts on children's cognitive skills, particularly on the frequency of reading to children. All the same, family stress model predictors such as warmth of mother and psychological distress had important direct impacts on children's cognitive skills. Likewise, family investment model predictors such as income and helping children with reading and math were all linked with children's improved psychological adjustment. The mixed, composite or hybrid 'hypothesis' about the role of stress processes in children's brain development was strongly backed by these findings. Moreover, Table 5 demonstrated that the role of children's cognitive skills and psychological regulating displayed variances along working-class groups and carried more importance among these groups. These results revealed that the paths of causality were much more complicated than the outcomes predicted by the hypotheses proposed in the family stress model and the family investment model.

A second broad result pertained to the 'class subcultural' theories debated in the introduction. Children's cognitive skills and psychological adjustment wholly mediated the impacts of parental social class on children's educational performance at the age of 7. Sociological theories based on class subcultural processes were widely ignored and neglected when explaininmg

social class differences, inequalities and gaps in educational performance up to middle childhood. Concerning children from working-class families, 'class subcultural' theories presumed that disadvantages in the school classroom stemmed from their lack of access to certain cultural knowledge or resistance to classroom behavior patterns. 'Class subcultural' theories asserted that subcultural processes gained greater importance as children grew older and perhaps as they engaged in interaction with educational performance.

It was suggested that subcultural theories did not take into account and paid no heed to the logical foundations of the early years of life in order to account for first, early-life differences in educational performance. It was alleged that subcultural theories did not receive empirical support unless they were reformulated and reorganized for operationalization through the mediating variables used here. Researchers and theorists backing the cultural capital argument emphasized that differences in cultural capital along socioeconomic strata and social classes in society were converted into differences in children's cognitive skills via patterns of classroom interacting in school. When cultural capital led to cognitive skills in children, this meant that the ingredient of cultural capital were not virtually arbitrary, but they actually helped children develop skills or abilities.

The assertions put forward by researchers and theorists who highlighted the role of cultural capital were criticized and it was alleged that the British Ability Scales (BAS) used to measure cognitive abilities actually reflected essentially arbitrary and random cultural choices and preferences in such a way that BAS itself became a measure of cultural capital. This research attempted to refrain from the probability of 'cultural influences' using language codes by excluding the naming vocabulary subscale. The subscales of the British Ability Scales are broadly viewed as valid measures of cognitive competence that are largely independent of cultural information in order to determine and assess cognitive abilities in children. It was primarily emphasized that children who were exposed to such cognitive ability scales or taught more 'problem-solving' skills had an advantage and that this was clearly

associated with socioeconomic status or social class. It was pointed out that parents who taught their children cognitive skills were also teaching them cultural capital.

The findings obtained from the current study revealed that measures of parental cognitive abilities accounted for differences, inequalities and gaps in children's cognitive development. These ifferences, inequalities and gaps expounded SES or social class trends in their educational performance. Here, studies related to twins, siblings, and cousins presented evidence that cognitive abilities could be transferred and passed down to children through genetics and heredity. A meta-analysis of 212 studies alleged that maternal impacts were mostly negligible and accounted for 20 % of the covariance among twins and 5 % among siblings. It also asserted that the impacts of genes decreased in line with two measures of genetic and hereditary inheritance and transmission of the impacts of genes being less than 50 %. The shared maternal environment could explain the noticeable and striking correlation between the intelligence of twins, especially in adult twins raised separately. The genetic and hereditary transmission of intelligence increased during early childhood, but whether it was detected afterward remained unclear. The research suggested that the genetic and hereditary transmission of intelligence either remained stable and constant during adolescence and adulthood or continued to increase with age (Devlin, Daniels, & Roeder, 1997; Feldman, Otto, & Christiansen, 2000). Nevertheless, differences in cognitive abilities, usually named to as intelligence (IQ), were emphasized. Phenotypic traits were measured as cognitive test scores and were conditional on a variety of factors. Also, it was asserted that a person's genetic and hereditary intelligence was established by genetic and hereditary inheritance.

Did possession of measures of parents' cognitive ability and the assumption that parental cognitive ability mediated the association between SES or social class and children's educational achievement mean that the SES or social class bias in children's educational achievement was explained by the fact that cognitive abilities were transmitted through genetics and inheritance?

SES or social class also impacted the development of cognitive abilities in the generation of parents too. Here, it was indicated that there was a strong, large and substantial intergenerational reproduction of social positions and that now it existed as a well-established finding in the economic and sociological literature.

The current research expanded and amplified the evidence showing that children had enormous potential, but that their abilities and capacities to learn new skills and talents were sensitive to the environment and context of early childhood. Variations, differences, inequalities and gaps in resources and capital accessible to families across SES or social class not only indirectly affected children's cognitive development through nutrition and food, but also played a part in parental efforts to do the best for children and ensure their mind development.

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CHAPTER 11

THE IMPACT OF SOCIOECONOMIC STATUS ON ACADEMIC PERFORMANCE OF STUDENTS PARTICIPATING IN THE PROGRAMME FOR INTERNATIONAL STUDENT ASSESSMENT (PISA)

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Introduction

The current study evaluated the association between students' socioeconomic status (SES) and their academic performance by handling SES as a multidimensional rather than a one-dimensional measure. The study utilized data from approximately 600,000 students from 77 countries who took part in the 2018 Programme for International Student Assessment (PISA) to determine the impact of SES on students' math, science and reading performance. The combined SES measures utilized by PISA could be divided into six component variables that simultaneously predicted students' academic performance. This analysis led to several new perceptions. Firstly, the two predictors of SES in society, including books at home and the highest occupational status of parents, were evidently more predictive of students' academic performance compared with the other predictors. Secondly, a new combined measure solely based on these two predictors, namely books at home and the highest occupational status of parents, generally exposed significantly larger SES-related differences, inequalities and gaps in academic performance compared with those reported by PISA. Thirdly, the analysis revealed striking differences across societies in the association between the possession of financial wealth and students' academic performance. The independent impact of wealth on students' academic performance was found to be null or even slightly negative in most societies; however, this impact was highly positive in the least developed societies. These findings involved how SES-related academic performance differences, inequalities and gaps should be measured and explained.

For over a century, socioeconomic status has been regarded as a major impact on students' academic performance (White, 1982; Coleman et al., 1966; Sirin, 2005; Harwell et al., 2017). SES is generally considered as a one-dimensional predictor that may be operationalized in a myriad of different ways, including educational attainment of parents, occupations of parents and family income or economic resources of parents, or a combination of these factors (Cowan et al., 2012). The current research here emphasizes the benefit of handling SES as a multidimensional predictor of students' academic performance.

Socioeconomic status is commonly defined as the position of individuals or families in a hierarchical social structure that includes controlling, having access to and benefitting from resources such as wealth, power, social and cultural capital, as well as prestige, and is graded as lower, middle, and upper (Mueller & Parcel, 1981; Willms & Tramonte, 2019). The dominant viewpoint in this study indicated that the significance of the functions of SES elements could vary. It was asserted that key socioeconomic factors such as parental income and occupation were handled only as different indicators of a one-dimensional hierarchical social structure that was assumed to affect students' academic performance. From this point of view, comparisons were made between different SES elements that served them best as indicators of SES alone, and the literature provided an array of views on this issue (Schulz, 2005; Marks, 2011; Jerrim et al., 2019). It was claimed that a combined measure of SES was preferred not only to show how SES was defined as a concept but also to minimize measurement errors. PISA, a large-scale international assessment programme, employs a combined measure based on educational attainment of parents, occupational status of parents and home ownership of parents as indicators of SES (Avvisati, 2020).

It was argued that it did not really matter how SES was operationalized for the overall picture of the association between parental SES and students' academic performance. Although the effect sizes of SES on students' academic performance might vary across different operationalizations, SES has been found to be positively related to students' academic performance, whether represented by a single indicator or a combined measure built on several indicators (White, 1982; Sirin, 2005; Harwell et al., 2017). Nevertheless, it was also noted that considering SES as a single dimension might lead to the loss of valuable information. Therefore, it was emphasized that socioeconomic status should be handled as a multidimensional predictor of students' academic performance, with different measures of SES that could be used as multiple individual variables. With its various measures and multidimensional facets such as parental education, parental occupation and family income, SES was suggested to be predictive of the academic performance of students as multiple separate variables (Harwell et al., 2017; Willms and Tramonte, 2019). It was highlighted, however, that it was difficult to find specific studies that actually

utilized multiple separate measures of SES. The research investigated the groundwork for the view and recommendation that different measures of SES should be used as multiple individual variables and that socioeconomic status should be regarded as a multidimensional predictor of students' academic performance.

Experts assembled in a panel conducted by the National Center for Education Statistics discussed recommendations for the definition and measurement of socioeconomic status (Cowan et al., 2012). The resulting report stated that researchers and policymakers were interested in socioeconomic status as a contextual variable and as a covariate with student performance to investigate the impacts of other variables, such as class size or school administration policies, in order to explore issues of educational equity and justice. The report specifically expressed an instrumental perspective of SES and stated that SES aroused interest because it was a convenient variable for assuring the equivalence of treatment and control groups in educational intervention researches (Cowan et al., 2012). The report also noted that handling SES as multiple individual variables might lead to potentially conflicting consequences for different variables, thus complicating interpretations. The report advised making employ of a composite variable to integrate knowledge from multiple variables while keeping clear of conflicting narratives and interpretations about its associations with the academic performance of students (Cowan et al., 2012).

Advantages of Handling SES as a Multidimensional Predictor of Students' Academic Performance

It has been asserted that there are a number of advantages of handling SES as a multidimensional rather than a one-dimensional predictor of academic performance in examining the relationship between SES and students' academic performance. The first advantage is that considering SES as multidimensional rather than unidimensional is likely to provide a more detailed comprehension and explanation of the phenomenon. Researchers attempted to examine in detail which mechanisms caused and were at the basis of the connection between SES and students' academic performance. Detailed knowledge of how the socioeconomic advantage of parents changed into a

performance advantage for students would be immensely valuable in guiding interventions aimed at minimizing and eradicating the underprivileged conditions of students from low-SES families. Theorists and researchers asserted that there were certain mechanisms that caused and were underlying the relationship between socioeconomic status of parents and academic performance of students. The literature expressed that the main mechanisms were (1) genetic transmission and transfer of skills along generations, (2) non-monetary inputs such as reading stories and helping with homework for cognitive development and academic performance of children, (3) monetary inputs such as school costs and private tuition fees, and (4) negative impacts of high-stress levels due to financial difficulties (Jerrim & Macmillan, 2015; Rözer & van de Werfhorst, 2019). It was underlined that these mechanisms were not an intangible social hierarchy but rather reflected concrete factors. It was noted how and to what extent various more concrete factors such as (1) genes, (2) skills of parents, (3) spending both time and money to improve and enhance their children's education and academic performance were important and had a part in the relationship between parental SES and the academic performance of students. It was emphasized that in order to gain a deeper and broader understanding of the relationship between parental SES and students' academic performance, it was necessary to analyze and distinguish the individual impacts of each of these factors related to parental SES. Considering and assessing the impact of wealth or higher income on students' academic performance as an indicator of SES would reveal the fact that people might have acquired wealth or higher income through a variety of paths, and not all of them by means of long-term education or high-status occupations. Theorists and researchers emphasized that the degree to which wealth and higher income had a direct impact on students' academic performance, through monetary inputs such as school costs and private tuition fees, should be analyzed significantly independent of where the money came from and thus distinguishable from other impacts. By simultaneously incorporating SES indicators such as wealth, education and occupation of parents as individual predictors of students' academic performance, it was possible to examine if parental wealth actually had a specific individual impact on students' academic performance.

The second advantage of handling socioeconomic status as a multidimensional predictor emerges when socioeconomic factors predict the total amount of variation in students' academic performance, that is, when the total amount of variation in students' academic performance is explained by socioeconomic factors. This is determined by the strength of the relationship between socioeconomic status of parents and students' academic performance, or the socioeconomic performance differences, inequalities and gaps. Studies focused on the magnitude of academic performance differences, inequalities and gaps associated with SES, and meta-analyses discovered quite different estimates of the effect sizes of parental SES on students' academic performance across studies. They discovered highly varied estimates of the effect sizes of parental SES on student academic performance and came up with an array of effect sizes (White, 1982; Sirin, 2005; Harwell et al., 2017). It was asserted that giving more importance and priority to certain elements for inclusion in the study revealed powerful indications and signs that different choices and preferences, particularly of SES elements, generated different estimates of SES-related performance differences, inequalities and gaps (Şirin, 2005). It was emphasized that when different socioeconomic factors such as family income, parental education and parental occupation had independent effects on students' academic performance, the total amount of variation in students' academic performance would be underestimated when a single specific socioeconomic factor is incorporated in the study. In other words, the total amount of variation in students' academic performance explained by socioeconomic factors would be underestimated. One advantage of considering SES in a multidimensional manner to investigate the impact of SES on students' academic performance enabled researchers to avoid such underestimation.

Underestimating the total impact of socioeconomic status on students' academic performance resulted from using a combined measure of SES. Otherwise stated, underestimation occurred through the weights of specific elements of SES that were selected as the most optimum in the study. The third advantage of employing the socioeconomic status elements as multiple individual predictors in the study is that the results of such an analysis were able to provide the most optimum weights for a combined

measure to avoid underestimating the impact of socioeconomic status. It was alleged that the occurrence of existing combined measures depended upon other principles (Avvisati, 2020), and therefore could not evade the problem of underestimation.

Lastly, it was stated that estimates of the influence of SES on student academic performance exhibited considerable variations in magnitude among societies and tended to be lower in developing countries (OECD, 2018; Kim et al., 2019). It was highlighted that the cross-societal variation in these SES impacts was thought-provoking as it failed to explain components such as the number of hours of instruction, diminished class size and teacher qualifications (Strietholt et al., 2019; Rözer and van de Werfhorst, 2019). Nevertheless, it was stated that the cross-societal variation in the effects of socioeconomic status was somewhat mysterious because it was not defined well enough. Previous research suggested that the comparative particularity and distinctiveness of different socioeconomic factors in a society was contingent upon its level of development (Kim et al., 2019). Therefore, it was asserted that country differences in the impact of socioeconomic status on students' academic performance emerged when SES was operationalized differently by factors varying from parents' wealth to their occupational status. The impacts of SES on students' academic performance might vary and exhibit differences from society to society. The fourth advantage of considering socioeconomic status as a multidimensional predictor in studying the relationship between socioeconomic status and students' academic performance, particularly in a multi-community study, is that it has allowed researchers to examine how and to what extent different measures of SES interact with communal factors. Such analyses have led to a deeper and broader understanding of why SES-related performance differences, inequalities and gaps exhibit differences as per the development level of countries.

Objectives of the Current Stuıdy

Four potential advantages of using socioeconomic status as a multidimensional predictor of students' academic performance were discussed above in investigating the relationship between socioeconomic

status and students' academic performance. The objective of the current study is to empirically display the advantages of these advantages employing data from PISA, a large-scale international assessment. The study predicted the individual impacts of different elements of SES on students' academic performance separately for each participating society. Here, it (1) explored which elements of SES were likely to have the largest individual impacts on students' academic performance. (2) assessed how much the combined measure of SES underestimated the SES-related gaps in academic performance when compared with multiple elements of SES. (3) suggested an alternative combined measure of SES with more desirable features. (4) investigated how and to what extent the individual impacts of the elements of SES on students' academic performance exhibited differences based on the development levels of countries.

METHODS

The Programme for International Student Assessment (PISA) is conducted by the Organisation for Economic Co-operation and Development (OECD) and measures the academic performance of 15-year-old students in math, reading and science. PISA included a representative sample of students from each participating country, usually about 5000 but sometimes considerably larger (OECD, 2019). The current study utilized data from the existing PISA 2018 and examined the relationship between SES and academic performance of approximately 600,000 students, generally born in 2002, from 77 societies.

Measurements of Academic Performance

In the official PISA report, math, science and reading skills of 15-year-old students were measured and evaluated (OECD, 2019). The survey examined and tested each student on a subset of all tests to assess a wider variety of subjects at the country level. Based on the test results, 10 "plausible values" were assigned for the academic performance of students in each domain.

Measurements of Socioeconomic Status

The current study focused on the combined measure of the PISA survey to obtain multiple measures of socioeconomic status and disintegrated the subdivisions used by PISA. The six component measures of SES, as described below, included (1) highest occupational status of parents, (2) highest educational level of parents, (3) possession of wealth, (4) possession of culture, (5) educational resources at home, and (6) books at home.

Socioeconomic Status-Related Coımbined Measure of PISA

PISA presented and utilized a combined measure of SES based on economic, social and cultural status (ESCS). This combined measure included three variables, namely highest occupational status of parents, highest level of education of parents and home ownership, which were standardized and then transformed into an average indicator. In PISA, home ownership was further subdivided into four items: (1) wealth, (2) culture, (3) educational resources at home and (4) number of books at home, and included a total of 25 items.

Highest Occupational Status of Parents

The PISA survey tried to determine the highest occupational status of parents by asking students open-ended questions about the occupations of their mothers and fathers. The responses students provided concerning their parent's occupations were coded and matched to an international indicator of occupational status (Ganzeboom, 2010).

Highest Educational Level of Parents

The PISA survey asked students questions about the educational level of their mothers and fathers, ranging from primary school to postgraduate education. The highest level of education completed by mothers and fathers was obtained from the students' responses, which were then converted and coded as per years of education based on international standards.

Possession of Financial Wealth

The PISA survey utilized a 12-item scale related to owning cars and children's having their own rooms to measure and assess the wealth variable

as an indicator of SES. Some country-specific wealth items were also included here.

Possession of Culture

The PISA survey utilized a 5-item scale related to literature, art and music to measure and assess the cultural-possession-variable as an indicator of socioeconomic status.

Educational Resources at Home

In the PISA survey, the educational-resources-at-home variable was measured and assessed using a 7-item scale related to studying at home, such as a desk, a computer and a dictionary.

Books at Home

In the PISA research, students were asked questions to determine the number of books at home on a six-point scale (1 = "0-10 books", 2 = "11-25 books", 3 = "26-100 books", 4 = "101-200 books", 5 = "201-500 books", 6 = "more than 500 books". It was indicated that the books-at-home variable was occasionally used as a single element of socioeconomic status.

Analysis

The study utilized the integrated database analyzer ensured by the international organization for the evaluation of educational success. The integrated database analyzer created the SPSS syntax to analyze PISA data so that the standard errors accurately reflected the complex plan designing of the research to employ plausible values. In the study, correlations, multiple linear regressions and means such as 25% were defined below using the IDB Analyzer.

RESULTS

Intercorrelations of SES Elements

The analysis shows the mean values, standard deviations and intercorrelations among the six elements of SES in 77 societies in Table 1b. It was pointed out that the correlations among the different socioeconomic

status elements were not very strong and the average across societies was found to be well below 0.50 with most of the correlations being below 0.30. Otherwise stated, the different elements of SES did not appear to be very closely linked to one another. It is therefore implied that there are good reasons to consider, comprehend and perceive the different items of SES as individual dimensions and to investigate their impacts on students' academic performance.

Table 1a. Mean values, standard deviations and correlations among SES elements in society

	Mean value	Standard deviation	1	2	3	4	5
1. Highest occupational status of parents	21,7	1,7	-				
2. Highest educational level of parents	2,6	0,7	0,07	-			
3. Parents' possession of financial wealth	0,9	0,2	0,11	0,10	-		
4. Parents' possession of culture	0,9	0,1	0,06	0,05	0,07		
5. Educational resources at home	1,0	0,1	0,07	0,07	0,12	0,05	-
6 Books at home	1,3	0,1	0,08	0,06	0,07	0,08	0,05

(Eriksson, Lindvall, Helenius, & Ryve, 2021, p. 4).

Table 1b. Mean values, standard deviations and correlations among SES elements in 77 societies

	Mean value	Standard deviation	1	2	3	4	5
1. Highest occupational status of parents	50,0	6,8	-				
2. Highest educational level of parents	13,4	1,1	0,46	-			
3. Parents' possession of financial wealth	-0,5	0,7	0,30	0,28	-		
4. Parents' possession of culture	-0,2	0,3	0,26	0,25	0,30	-	
5. Educational resources at home	-0,2	0,4	0,23	0,23	0,38	0,39	
6. Books at home	2,9	0,5	0,32	0,28	0,27	0,46	0,29

(Eriksson, Lindvall, Helenius, & Ryve, 2021, p. 4).

Individual Impacts of Six Elements of SES on Students' Academic Performance

The study utilized six elements of SES in each community to predict students' academic performance and also conducted multiple linear regression analyses of students' academic performance in three different domains, namely math, science and reading skills. The researchers focused on the standardized regression coefficients to make comparisons across the elements of SES. These coefficients predicted the standard increase in students' academic performance from an increase in the elements of socioeconomic status as predictors up to one standard deviation.

Domain Generality of Impacts of SES Elements on Students' Academic Performance

In Figure 1, the analysis displays estimates of the individual impacts of each of the six elements of socioeconomic status of parents, such as occupational status, educational level, wealth, culture, educational resources at home and books at home, on students' academic performance and also the values of the standardized regression coefficients across 77 societies. Here, the mean value of the standardized regression coefficient (averaged across societies) for each element of socioeconomic status was indicated separately for the three academic fields of math, science and reading**.** It was also pointed out that the patterns of results were approximately the same across different academic fields. For example, the influence of books at home as an element or indicator of SES was found to be as large for math and science performances as it was for reading performance. The effect was averaged across the three domains for each element of SES (Cronbach's $\alpha > 0.98$). Statistically, these mean impact measures, or standardized regression coefficients for the different elements of SES, averaged across the three academic fields in 77 societies, are displayed in Table 2.

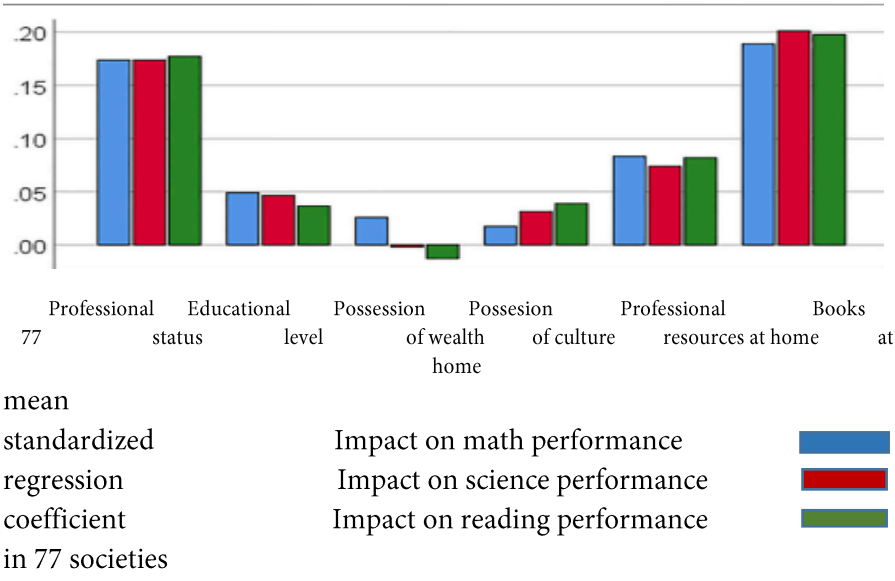

Figure 1 Predictions of the individual impact of six elements of parental SES as occupational status, educational level, wealth, culture, educational resources at home and books at home on students' academic performance. The colored bars indicate the mean values of standardized regression coefficients along 77 societies. Different colors represent different domains of students' academic performance. Blue represents math performance, red represents science performance and green represents reading performance. (Eriksson, Lindvall, Helenius, & Ryve, 2021, p. 4).

Table 2 Describing the standardized regression coefficients of different socioeconomic status elements averaged along three academic fields in 77 societies.

	Mean	Standard deviation	Minimum	Maximum
1. Highest occupational status of parents	0,17	0,05	0.06	0.27
2. Highest educational level of parents	0,04	0,05	-0.07	0.14
3. Parents' possession of financial wealth	0,00	0,10	-0.16	0.34
4. Parents' possession of culture	0,03	0,05	-0.11	0.14
5. Educational resources at home	0,08	0,06	-0.03	0.27
6 Books at home	0,20	0,08	0.03	0.34

(Eriksson, Lindvall, Helenius, & Ryve, 2021, p. 5).

Particular Significance of Books at Home and Occupational Status of Parents

As shown in Figure 1, the current study revealed that books at home and occupational status of parents had much larger average effects on students' academic performance compared with other elements of socioeconomic status. This was deemed an important finding and, among another issues, it was asserted that a useful combined index of socioeconomic status might have been based on only these two items.

Alternative Measures of SES in Academic Performance Differences, Inequalities and Gaps

PISA surveys mentioned two different socioeconomic status-related measures of academic performance differences, inequalities and gaps observed among students in society. According to the first measure, students were operationalized as advantaged students when they were in the highest quartile on the ESCS index and as disadvantaged students when they were in the lowest quartile. In other words, it referred to the mean difference, inequality and gap in academic performance between advantaged students in the highest quartile on the ES**CS** index and disadvantaged students in the lowest quartile. Another measure was defined as the rate of variance in students' academic performance (rate of variance in R2) accounted for by the economic, social, cultural status (ESCS) index. The PISA index of economic, social, cultural status (ESCS) added together different socioeconomic status elements in a manner that did not reveal their comparative impacts on students' academic performance. It was argued that estimates of SES-related academic performance differences, inequalities and gaps based on the economic, social, cultural status (ESCS) index would thus underestimate socioeconomic status-related academic performance differences, inequalities and gaps. The current study sought to demonstrate this underestimation by constructing an alternative indicator of SES based on the two SES elements that had the biggest impact on students' academic performance. Accordingly, books at home and parents' occupational status were determined as alternative indicators of SES. After standardizing these two SES elements across the entire data set, they were averaged into a two-item SES indicator. The study

compared the estimates of socioeconomic status-based academic performance differences, inequalities and gaps when socioeconomic status was measured by the economic, social, cultural status (ESCS) in PISA versus the two-item indicator.

The Two-Item Index Provides Larger Predictions of Differences, Inequalities and Gaps in Academic Performance

When the two-item SES index from PISA was used instead of the ESCS index, the mean difference, inequality and gap in academic performance between advantaged and disadvantaged students enhanced to about 11 percentage points (or 9 points in test scores) in the average society. The largest academic performance difference, inequality and gap in a given society enhanced even more, to about 19 percentage points (or 23 points). The results, which were found to be similar along all academic fields, are presented in Figure 2.

The Two-Item Index Accounts for More Variation in Students' Academic Performance

The rate of variance in students' academic performance by economic, social, cultural status (ESCS) index and the two-item SES indicator are displayed in Table 3, respectively. In line with the previous analysis, in the average society, the two-item socioeconomic status indicator accounted for more of the variance in students' academic performance compared with the ESCS index. The ESCS index explained 12-13 % of the variance in students' academic performance, while the two-item SES indicator explained 15 % of the variance in students' academic performance. This variance was also observed in societies with the largest socioeconomic status-related differences, inequalities and gaps in academic performance. In societies with the largest socioeconomic status-related differences, inequalities and gaps in academic performance, the ESCS index explained 21-24 % of the variance in students' academic performance, while the two-item SES indicator explained 29-31 % of the variance in students' academic performance.

Table 3 The rate of the variance in students' academic performance (variance in R2) explained by SES when operationalized by PISA combined measure of

Economic, Social and Cultural Status (ESCS), or the new two-item index, or multiple predictors.

	R^2 (Economic, social, cultural status) (ESCS)		R^2 (Two-item SES index)		R^2 (Multiple predictors)	
	Mean	Maximum	Mean	Maximum	Mean	Maximum
Math performance	0.13	0.24	0.15	0.31	0.17	0.32
Science performance	0.12	0.21	0.15	0.31	0.17	0.32
Reading performance	0.12	0.21	0.15	0.29	0.17	0.30

(Eriksson, Lindvall, Helenius, & Ryve, 2021, p. 6).

The study could inevitably explain more variance in students' academic performance using all six elements as opposed to multiple predictors. This analysis could generate the most appropriate weights for all six elements and run the analysis separately, which enabled specific optimization for each society. The results of this analysis are depicted in the last column of Table 3. In spite of the intrinsic advantage of this method in explaining the variance in students' academic performance, the rate of the explained variance appeared to increase only marginally in comparison with the simple two-item index. The two-item index explained 31 percent of the variance in students' academic performance, while the six elements together explained 32 percent of the variance. This was especially apparent in societies where SES-related academic performance differences, inequalities and gaps were the biggest. As always, comparable results were reached along all three academic fields.

The utilization of multiple predictors permitted and enabled a more extensive explanation of the variance; however, this benefit partly reflected a statistical model with many variables with respect to the sample size. To evaluate if the more complex model was actually achieved, researchers used model selection criteria such as the Bayesian Information Criterion (BIC).

Cross-Societal Variation in the Impacts of SES on Students' Academic Performance

The study examined how and to what extent the particular impacts of different socioeconomic status elements on students' academic performance differed among societies. Descriptive statistics of the standardized regression coefficients of different socioeconomic status elements along three academic fields averaged across 77 societies are presented in Table 2. Here, the distribution between minimum and maximum impacts across 77 societies indicated that the cross-societal variation in the magnitude of socioeconomic status effects was real and substantial. As regards sorting societies according to the magnitude of SES-related academic performance differences, inequalities and gaps, is it important which SES element was used? To respond this particular question, the study determined correlations among the impacts of different socioeconomic status elements. The correlations among the standardized regression coefficients of the six elements of SES and the Human Development Index across academic domains averaged across 77 societies are presented in Table 4. It was pointed out that the correlations among the impacts of variables were often negative. For example, the correlation between the impacts of books at home and wealth possession was found to be negative. This implies that when societies are sorted according to the magnitude of academic performance differences, inequalities and gaps between students from families with few books at home and those from families with a lot of books at home, or between students from families with little wealth and those from families with substantial wealth, totally different lists are obtained.

Table 4 Mean correlations among the six elements of SES and the Human Development Index standardized regression coefficients across academic domains in 77 societies,

	1	2	3	4	5	6
1. Standardized regression coefficient of highest occupational status of parents	-					
2. Standardized regression coefficient of highest educational level of parents	-0.30**	-				

3. Standardized regression coefficient of parents' possession of wealth	-0.16	-0.11	-			
4. Standardized regression coefficient of parents' possession of culture	0.15	0.15	-0.52***	-		
5. Standardized regression coefficient of educational resources at home	-0.14	-0.05	-0.08	-0.39**	-	
6. Standardized regression coefficient of books at home	0.30**	-0.10	-0.52***	0.21	-0.25*	-
7. Human Development Index	0.09	0.15	-0.62***	0.25*	-0.20	0.71***

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$ (Eriksson, Lindvall, Helenius, & Ryve, 2021, p. 6).

The Impacts of Books at Home and Financial Wealth Vary in Opposite Directions as per the Level of Development

In order to better understand this inequality, the research assessed and took into account the development levels of societies, described according to the Human Development Indicator (HDI) (Smits & Permanyer, 2019). How and to what extent the impacts of the six elements of SES are correlated with the Human Development Indicator (HDI) is depicted in the last row of Table 4. Here, the impact of books at home had a very strong positive correlation with the Human Development Indicator (HDI) at the level of $r = 0.71$, while the impact of wealth possession seemed to continue in the opposite direction. It was indicated that it had a negative correlation with the Human Development Indicator (HDI) at the level of $r = -0.62$. This implied that in societies with a lower level of human development, students' academic performance was less strongly linked to books at home, but more strongly linked to wealth possession. While books at home had a positive impact on students' academic performance everywhere, the effect of books at home on students' academic performance was found to be weaker in less developed societies. In this study, it was determined that the impact of parental wealth on students' academic performance was negative in most societies, but still strongly positive in some less developed societies.

DISCUSSION

It was suggested in the present study that a multidimensional approach towards socioeconomic status should be avoided as it would further complicate the interpretation of results in educational research (Cowan et al., 2012). The present research assumed that a multidimensional approach might still be valuable and thus could be a source of comprehending and perceiving the complexity of the results that were obtained in this way. PISA incorporated a combined measure of SES into the study to predict students' academic performance. The current study used six elements from the PISA combined measure to predict performance. By handling SES as both multidimensional rather than one-dimensional, these six elements were used as multiple predictors of students' academic performance, The study analyzed data from approximately 600,000 students in 77 societies and reached some interesting findings that were determined by and significantly relied upon a multidimensional approach towards examining the relationship between SES and students' academic performance.

First of all, the current study obtained very distinct and specific results regarding the comparative significance of different socioeconomic status elements. The single item on the number of books at home as an indicator of socioeconomic status was the most powerful predictor of students' academic performance in the average society. The highest occupational status of parents was the second most powerful predictor of student performance. The other four socioeconomic status elements, namely highest educational attainment, educational resources at home, cultural possession, and wealth possession of parents tended to provide little contribution to the prediction of students' academic performance. These findings introduced a new way of evaluating the validity of theories about the impact of socioeconomic status on students' academic performance. The question is: Can theories about the influence of socioeconomic status on students performance explain the primacy of books at home and parent's occupational status?

The second finding in the study pertained to the magnitude of SES-related academic performance differences, inequalities and gaps, an issue to which PISA paid a great deal of attention. PISA studies assessed and estimated SES-related academic performance differences, inequalities and gaps utilizing

a combined measure based on a subset of SES. It was underlined that the employ of a combined measure would always underestimate SES-based academic performance differences, inequalities and gaps, compared with an analysis based on multiple separate elements, unless of course the element weights of the combined measure were chosen to fit the multiple regression coefficients perfectly. When multiple predictors were used instead of the Programme for International Student Assessment (PISA) combined measure, the rate of variance in students' academic performance explained by SES (R squared) enhanced up to 40 % in the mean society and even more in the society with the largest SES-related academic performance differences, inequalities and gaps. This finding explained and demonstrated that estimates of socioeconomic status-related performance differences, inequalities and gaps would most probably substantially underestimate the total impact of socioeconomic factors on students' academic performance, regardless of whether based on combined measures or single measures. It was also emphasized that this was important to bear in mind when explaining meta-analyses of such estimates (Sirin, 2005; Harwell et al., 2017). It was observed that there were some misconceptions in the literature surrounding this subject, including unwarranted, unjustified and unreasonable warnings that using a single socioeconomic status element might somehow overestimate the impact of socioeconomic status on students' academic performance (Sirin, 2005).

It was emphasized that there was no need to use multiple predictors to develop and enhance estimates of SES-related academic performance differences, inequalities and gaps, but instead, it would be enough to develop and enhance the combined measure by modifying the weights of the elements to reflect the comparative significance of the socioeconomic status elements. The current study displayed this by replacing the Programme for International Student Assessment (PISA) combined measure with a two-item measure based on only the two most significant elements, namely the number of books at home and the highest occupational status of the parents. This clear and simple measure together implemented the multidimensional approach almost exclusively to societies where wide socioeconomic status-related academic performance differences, inequalities and gaps existed. The study explained

and demonstrated socioeconomic status-related academic performance differences, inequalities and gaps in terms of the mean difference between the academic performance of students in the highest and the lowest quarter (quartile) on the socioeconomic status measure. It was found that employing the two-item index instead of the Programme for International Student Assessment (PISA) combined measure revealed a substantial increase in the predicted socioeconomic status-related academic performance differences, inequalities and gaps. It was concluded that the two-item index was more efficient at perceiving and comprehending the extent of socioeconomic status-related academic performance differences, inequalities and gaps. The study established that in the average society, the number of books at home and the occupational status of parents were particularly significant predictors of students' academic performance.

Finally, the study investigated how and to what extent the results differed across societies and demonstrated that the level of human development had a great systematic impact on societies. It was indicated that wealth had no positive impact on students' academic performance in the most developed societies; rather, it had a substantial positive influence on student performance in the least developed societies. It was found that books at home, in particular, had a much greater positive influence on students' academic performance in the most developed societies compared with the least developed societies. It was also emphasized that these two socioeconomic status elements had a much greater positive effect on students' academic performance compared with other variables, indicating the particular significance of books at home and the occupational status of the parents. However, it was noted that this significant result was not universal. Comparisons of socioeconomic status-based academic performance differences, inequalities and gaps in society based on cross-societal studies generated quite different results contingent upon how socioeconomic status was operationalized. This highlighted the value of not only considering socioeconomic status as multidimensional rather than unidimensional but also undertaking a multidimensional approach towards socioeconomic status and applying it to each country separately. The research asserted that the relationship between socioeconomic status and students' academic

performance was best understood as a multidimensional approach utilizing socioeconomic status elements, which ideally included parents' occupational status, books at home and economic resources. This research made use of SES elements from PISA, which were limited to a substitute measure of economic resources or wealth possession, rather than a direct measure such as household disposable income.

Theories Related to the Impacts of Socioeconomic Status on Students' Academic Performance

The research has thus far evaluated the findings from a methodological point of view. Nevertheless, as stated earlier, the research findings had implications for theories about why socioeconomic status was related to academic performance of students. Theorists and researchers focused on direct causation and trait transmission as two broad plausible mechanisms to discuss the relationship between socioeconomic status and academic performance of students. The direct causation theory asserts that measures of socioeconomic status such as parental income, wealth as well as education, as knowledge and skills, have direct benefits to children's performance in school. More parental education permits and facilitates more non-monetary inputs for children, such as assistance with schoolwork and homework. More parental wealth, on the other hand, permits and facilitates more monetary inputs into education of children (Jerrim & Macmillan, 2015; Rözer & van de Werfhorst, 2019). When direct causation is a significant mechanism, parents could enhance students' academic performance by spending more money and using more knowledge and skills reflecting their level of education. Nonetheless, direct causation did not appear to explain the findings of the present study. These findings revealed that, in most countries, the impact of socioeconomic status on students' academic performance was largely accountable and attributable to the occupational status of parents and the number of books at home, rather than to their educational attainment and wealth possession. It was argued that it was difficult to see how and to what extent the occupational status of parents could directly bring about higher academic performance. It was also emphasized that the direct impact of the number of books at home on students' reading performance might be

enhanced when children tended to read the books available at home. On the other hand, this assumption could not explain the current study's finding that books at home had an equally strong impact on students' math achievement. Therefore, the study findings indicated that direct causation was not the primary cause behind the impact of socioeconomic status. This result was in compliance with studies on adopted children, which revealed that socioeconomic factors among adoptive parents, such as parental education, did not have clear and distinct impacts on educational attainment of children (Kendler et al., 2015; Ludeke et al., 2021).

An alternative theory, called trait transmission or transference, relies upon a combination of two well-supported hypotheses. The first assumption of the theory is that the performance in school and the performance of children from high SES families, defined by higher educational attainment as well as high-status and high-paying jobs, depended to some extent on a common set of personality features such as intelligence, self-efficacy and industriousness (Briley et al., 2014; Krapohl et al., 2014). The second assumption of the theory is that the traits that foster, nurture, enhance and improve these traits are in general genetically transmitted and transferred from parents to children (Ayorech et al., 2017; Garon-Carrier et al., 2017). It was emphasized that the transmission of traits that foster, nurture and enhance academic performance from parents to children easily explains the observed association between children's performance in school and the occupational status of parents. It was asserted that the much smaller independent impact of parents' educational attainment was in compliance with educational attainment being a less reliable indicator of features that foster, nurture and enhance academic performance, especially in societies where people received more years of education (Chmielewski, 2019).

The study established that parents' wealth possessions, such as homes, cars, and mobile phones, were positively associated with children's performance in school only in countries with low levels of development. In order to undertand and take account of how and to what extent the transmission of traits from parents to children could explain this finding, it was suggested that high economic development provided wealth for most

people (Pokropek et al., 2017) and that a society in which people did not work, strive or struggle to obtain wealth generated post-materialist values (Ahuvia and Wong, 2002). Therefore, it was emphasized that wealth was a weak indicator of the traits that fostered, nurtured and enhanced students' academic performance, especially in societies with high economic development. It was also asserted that the direct impacts of monetary input and economic difficulties on students' academic performance were greater and more substantial in societies with lower economic development

The current study questioned why books at home were so strongly associated with students' academic performance, especially in countries with higher levels of development. The study postulated that, in the degree that people could afford to buy the books they wanted, the number of books at home reflected the general interest and pleasure of parents in reading. It was stated that these traits assisted and facilitated schoolwork and homework and that they were liable to genetic transmission and transfer. This could explain the observed main impact. It was noted that those who enjoyed reading in poorer countries, however, might not be able to afford to buy books. The lack of money to buy books could predict the number of books at home as a weaker predictor of parents' pleasure in reading, in line with the observed impact of scarcity of books at home at lower levels of economic development. It was also suggested that the reported number of books at home might be less accurate in less developed countries, contributing to the decline in the observed impact (Rutkowski & Rutkowski, 2010).

In summary, although the current study aims to contribute to the methodological discussions, its findings could inform theories about the ways in which SES influences students' academic performance. It was emphasized that this was a crucial issue and called for much more research.

CONCLUSION

This research undertook a multidimensional approach towards investigating the association between socioeconomic status and students' academic performance by handling socioeconomic status as a multidimensional rather than a single-dimension measure. The study revealed

a remarkable variation in the impact of socioeconomic factors on students' academic performance. The impact of SES on students' academic performance exhibited variations both along factors and along societies; thus, higher socioeconomic cultural development was linked to the increased significance of some factors and reduced significance of others. These findings had implications for not only how socioeconomic status-related academic performance differences, inequalities and gaps should be measured but also how they could be explained.

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