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## EDITORIAL

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Dear researchers,

We are happy to share the tenth issue of Academy Journal of Educational Sciences (ACJES) with you. We would like to thank the members of the editorial board, advisors, writers and referees who have contributed to the publication of ACJES.

Hope to see you again in the next issues...

On behalf of ACJES  
Editor  
Dr. Abdullah Kaldırım

# The Role of Social Worker in Effective Implementation of the Indian National Education Policy 2020

Sachin BS<sup>a</sup>, Ramesh B<sup>b</sup>,

## Abstract

Education is a critical tool to liberate the mind from the shackles of poverty and ignorance. In this view, to bridge the gap between present industrial requirements and the education system, the National Education Policy 2020 (NEP-2020) has brought in. The present study was based on the NEP-2020 policy document hence document analysis method was adopted. The secondary data was drawn from various sources and content analysis was done to know the role of NEP-2020 in creating new vistas of skill development among the upcoming generation and to explore avenues to implement new education policy with the help of Social Work professionals. The new education policy gave more emphasis on school Social Workers appointment and their vital role to play with parents, teachers, management and pupil for recognizing, identifying, and fostering the unique capabilities of each student by sensitizing teachers as well as parents to promote each student's holistic development in both academic and non-academic spheres.

**Keywords:** Education, School Social Worker, The New Education Policy, Education System

## Introduction

The National Education Policy (NEP) 2020 aims to extend this learning outside the four walls of the classroom and inspire students to learn from their experiences in the real world. Because education is the foundation of economic and social progress, every country must have a well-defined, well-planned, and progressive education policy. Depending on their customs and cultures, different countries have varied educational curricula. Nearly three decades after the policy's last significant adjustment in 1986, the Government of India recently took a giant stride ahead by proposing its new education reform, the National Education Policy 2020 (NEP 2020). Three key theme advances are envisaged in the NEP 2020 (Ministry of Human Resource Development Government of India, 2020). To begin, it seeks to shift from content-driven rote learning education to applied learning. Second, develop a 360-degree assessment approach that takes the students' intellectual, physical, and mental well-being into account. In addition to that, the policy aimed to impart experiential learning through developing vocational skills, quantitative reasoning and 21st-century skills such as data science and coding. The principal purpose is to prepare Indian students to be true global citizens who are prepared for the future (India Today, 2020).

### *Implementation in Schools - Challenges and Measures*

Creating a learning environment that's enjoyable for all students is the goal of this policy. The goal of this strategy is to restore and revamp the system so that it works seamlessly for all its stakeholders. This includes the parents, students, and teachers. It is also aimed at recruiting the best and brightest teachers at all levels (Panda, 2020). But challenges lie with existing infrastructure and molding existing teachers in line with NEP 2020 aspirations.

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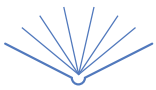
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### *School Social Worker*

The NEP 2020 identified the role of school social workers to address various psychosocial issues of school stakeholders. School social workers help children and adolescents develop their emotional, social, and academic skills. They work with school administrators, parents, and the community to address student issues (Ministry of Human Resource Development Government of India, 2020).

In 1949, Florence Poole defined a school social worker as someone who has the responsibility of deciding the needs of the school. This person should develop a method of providing these services that is consistent with a school's overall structure and goals.

The ideals that school social work promotes are as follows: (Allen-Meaers, Washington, & Welsh, 2015):

- Each student is valued as a person, regardless of any distinguishing characteristics.
- Each student should be permitted to participate in the learning process.
- Individual differences should be recognized; action should be directed at guiding students' goals with educational help in order to prepare them for the life they desire.
- Every child, regardless of race or socioeconomic status, has the right to fair treatment in education.

The National Association of Social Workers in the United States has a code of ethics for school social workers. In the twenty-first century, the Government of India formally recognized school social work. Since the 1970s, school social workers have been prominent in elite schools, following the American model of school counseling, which is focused on Carl Rogers' and others' client or person-centered approach. The main objective was the child's overall well-being (National Council of Educational Research and Training, 2015). Central Board of Secondary Education refers to school social workers as Health Wellness Teachers (Central Board of Secondary Education, 2014).

The obligation of a School Social Worker and a School Counsellor is especially enforced under the Integrated Child Protection Scheme (ICPS). The psychosocial support system launched under ICPS in Kerala with the help of a child development center (CDC) has hired social workers to give professional services in 800 schools. The programmes are solely available to adolescent girls, denying boys equal access. School social workers promote student learning and well-being, address academic and non-academic learning barriers, build strong and cohesive academic and social supports, and comprehend and implement various frameworks for evidence-based practice and programme development to ensure that the educational process works to its full potential.

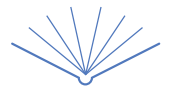
On both the micro and macro levels, a school social worker provides counseling and psychological services to children and adolescents in schools. Social workers work in the school community as mental health experts, social and emotional development leaders, family-school liaisons, and programme creation experts. In an ecological system approach, they want to address student concerns by collaborating with parents, the school, and the community. They are also concerned with crisis intervention, group therapy, recognizing and documenting child neglect and violence, integrating services for culturally and economically diverse communities, and educational policy challenges.

School psychologists and diagnosticians help students who are being examined to see if they have learning or psychological problems. Their reports ensure that children obtain treatments and changes that will assist them in improving their academic performance. Gifted and talented programmes, as well as special education programmes, are examples of these programmes. School psychologists must have a master's degree in psychology. School diagnosticians are a newer profession. Certification for this post often requires both teaching experience and a master's degree. Speech therapists diagnose and treat voice, speech, and language abnormalities. Most states require a master's degree in speech-language pathology to be licensed. Physical therapists help children with severe physical disabilities stay comfortable at school. Students might get help from vocational or transition specialists in building viable career plans. When students with special needs graduate from public schools, they are provided with follow-up services. School Social Workers work with pupils to help them achieve academic success. In a public school system, social work plays an important role in developing kids and connecting them to the tools and assistance they need to fulfil their potential in the educational process (O'Dennell, 2000).

### **Literature Review**

The National Education Policy intends to strengthen and modernize India's existing education system. The policy envisions a holistic learning paradigm that is integrated, engaging, and immersive. From many years many researchers advocated for the holistic learning, and multidisciplinary approach needs to be incorporated in education such as Prof. Yash Pal Committee's report "The Committee to Advise on Renovation and Rejuvenation of Higher Education" in March 2009 commented on regulatory framework for Higher Education "Where a holistic view of knowledge would demand a regulatory system, which treats the entire range of educational institutions in a holistic manner. A study by the Federation of India Chambers of Commerce and Industry (FICCI) and Ernst & Young quoted that, The Indian Higher Education system has made tremendous progress in terms of capacity creation and enrolment in the last decade, but it lags significantly in terms of global relevance and competitiveness. This report was released at the FICCI Higher Education Summit held in New Delhi on 13th and 14th November 2014. The report further highlighted that low employability of graduates is due to outdated curricula, a shortage of experienced quality faculty, and student-teacher ratios are noticeably high; there is a paucity due to limited institutional and industry linkages and a lack of autonomy to introduce new and innovative courses. Indian graduates considered employable are small in proportion. This is reflected in the record that there is a trend of placement outcomes dropping significantly as we move away from top-tier institutions.

According to Gentry (1990), teaching and learning pedagogies that include group interactions and assignments have proved beneficial in increasing experiential learning (Gentry, 1990). As outlined in the work of Engel and Charron (2006) and Moylan et al. (2008), the building and promotion of an entrepreneurial ecosystem have been significant for many educators to date (Engel & Charron, D, 2006). According to the examples above, there are three components to entrepreneurship education: (a) the acquisition of knowledge (Theory), (b) the establishment of an entrepreneurial support structure (Incubator), and (c) the development of entrepreneurial skills (Experiential Learning). Educators can try to provide an understanding of the context of entrepreneurship and imbibe the necessary skills by incorporating appropriate learning activities such as the use of concrete examples, simulations, projects, field



studies, and so on, and by allowing students to move outside the classroom. The conducive climate is created with the assistance of the entrepreneurial support system and by encouraging students to network and collaborate with one another (Moylean, Heagney, C. & Byrne, O., 2008). Students can form self-selected groups and work together. The emphasis on teams is deliberate and follows the results of Aulet (2013), Reiss (2011), and Van de Ven (1993) regarding the necessity of team development for entrepreneurial endeavours. This debunks the false notion of an entrepreneur as a lone superhero and emphasises the significance of a team approach for successful entrepreneurship. Students work in groups to develop concepts for viable items or services to offer, and then conduct market and possible consumer research. They then plan the operation, organising all logistics, financing, product, display and merchandising, floats, and so on. They sell at their designated times and are then asked to evaluate their financial and overall performance. This collaboration can also take place virtually, which promotes thinking and reflection in a familiar setting while also stimulating experiential learning. The student also has an important role to play in this learning. As a result, in pursuit of experiential learning, entrepreneurship education should focus on employing learning activities that forge students to build a support network and subsequent entrepreneurial skills, while understanding how and why this is placed within the context of entrepreneurship itself. Indeed, Wadhwa (2013) proposed that timing is critical, and that the objective is to deliver education at teachable moments when the entrepreneur is considering launching a firm or is ready to scale it. The Social Enterprise Project is another experiential learning project that challenges students to investigate and produce a business plan for a social enterprise while keeping in mind the value it brings to society rather than profit for the owners and shareholders. Aside from conducting market research and building the value proposition, the students are tasked with piloting a practical area of the firm that they have chosen. For example, students can create a social entrepreneurship business concept to teach the elderly how to utilise social media. Thus, students engage in an academic learning exercise that blends classroom theory and practices and adheres to Kurczewska's (2011) three dimensions of teaching entrepreneurship. As a result, students learn about social entrepreneurship and how to operate as a social entrepreneur, while also being encouraged to be more entrepreneurial in their approach to their project. Such a project, in and of itself, can be beneficial in integrating students with the larger, local community and has proven a particularly effective method of embedding and measuring the 'competence-insight' learning outcome for business as set out in the National Framework of Qualifications (Moylean, 2013). Experiential projects in marketing and sales, as well as the usage of social media and information technology, have been combined and introduced, and assessment is now making more use of digital technology to promote learning. Students are creating websites, social media campaigns and engaging directly with a variety of platforms to promote their business ideas, which are assisting in the development of networking skills, which O'Donnell et al. (2001) has deemed to be a fundamental entrepreneurial skill, with the inclusion of guest lecturers from local and national entrepreneurs, business mentoring clinics, business plan competitions, employer forums, and more. The method of teaching, learning, and assessment depends on a wide range of learning activities related to Kolb's experiential learning cycle.

**Evaluation Kolb's Four Identified Components (Kolb, 2014; Kolb&Kolb, 2017).**

Cooperative learning, open-ended assignments, critical-thinking exercises, simulation, and problem-solving

activities are some of the strategies used in student centre instruction to encourage active learning (Felder & Brent, R, 1996). Students' responsibility and independence aid in the development of lifelong learner traits such as motivation, self-evaluation, time management, and information access. Research on student learning emphasises the necessity of focusing on what students do and why they believe they are doing it rather than what the teacher does (Biggs, 1990). Cooperative learning has emerged as the main new approach to classroom instruction during the last decade. Cooperative learning is an instructional paradigm in which students cooperate in groups to complete structural tasks.

### **Theoretical Framework**

Despite the fact that various models and theories have been developed to characterise experiential learning, Kolbe's experiential learning cycle remains the most often used. In practice, in order to gain from personal or environmental experiences, the medical student must be willing to actively participate in the experience and follow it up by reflecting on the experience (Roman, 2018; Tanaka & Son, 2019). This must be accomplished by the student using analytical skills to gain a conceptual comprehension of the experience (Yardley, 2012).

Social work covers a variety of emotional and psychological abilities in addition to formal academic training. While knowledge and practices characterise the profession, some of the most significant skills are learned on the job. Academic and professional education equips you with abilities that are vital for them and should not be overlooked (Universityat Buffalo, 2021).

As a practice-based profession, social work (IFSW/IASSW, 2014) necessitates a blend of theoretical and practical expertise. Both types of learning are required for students to become professional social workers and occur both inside and outside of the university classroom as part of the field education experience.

### **Ecological System Theory**

The research was carried out from the standpoint of ecological systems. This theory was developed by Bronfenbrenner (1979). The idea presumes that each system includes roles, standards, and regulations that influence the psychological development of its members. Understanding this is aided by the five environmental systems with which a person interacts. These are their names: Family, school, religious institutions, neighbourhood and peers are examples of microsystem institutions and organisations that have the most immediate and direct impact on a child's development (Bronstein, 2003). It was clear that if we bring structural change by introducing a new framework for education and curriculum would nurture our budding futures to equip with the required skills.

### **The Rationale of the Study**

Indeed, with the fast-changing job market and global ecology, it is becoming increasingly important for children not only to learn, but also to learn how to learn. As a result, education must shift away from content learning to critical thinking and problem-solving skills. However, education must have a holistic and multidisciplinary approach. Pedagogy must evolve in order to make education more immersive, holistic, integrated, inquiry-driven, discovery-oriented, learner-centered, discussion-based, adaptable and, of course, enjoyable (Reddy, 2020). In addition to science and mathematics, the curriculum should include basic arts and crafts, humanities, games, sports and fitness, languages,





literature, culture, and values in order to improve all aspects and skills of learners and make education more well-rounded, useful, and fulfilling to the learner. The character must be developed through education, preparing students to be ethical, reasonable, compassionate, and caring citizens while also preparing them for gainful, fulfilling employment (Ministry of Human Resource Development, 2020).

The gap between the current state of learning outcomes and what is required for the current global job market must be bridged through undertaking major reforms that bring the highest quality, equity, and integrity into the system, from early childhood education through higher education (Ministry of Human Resource Development, 2020). Bridge the existing skill gap, addressing issues pertaining to scholastic development of pupils there is a scope of school social workers.

Social workers in schools play a vital role in educational settings. Social workers who work in school systems assist kids in improving their emotional well-being as well as their academic performance. School social workers are often employed by the school complex or a third-party agency with which the school district has a service contract. Absenteeism, social withdrawal, violent conduct, rebellion, and the effects of particular physical, emotional, or economic disorders are among the challenges that school social workers frequently assist students, families, and teachers (Barker, 2003), (Galambos, Erin T. Barker, & David M. Almeida, 2003) (NASW, 2009). Goal 4 (SDG4) of India's 2015 2030 Agenda for Sustainable Development intends to "provide inclusive and equitable quality education and develop lifelong learning opportunities for all" by 2030. To accomplish all of the essential priorities and goals (SDGs) of the 2030 Agenda for Sustainable Development, such a lofty aim would necessitate the redesign of the whole educational system to promote and encourage learning (Singh, 2021). As per the Government report in 2014, India has been facing the challenge of well-trained, skilled workers; it was estimated that only 2.3 percent of the workforce in India had undergone formal skill training as compared to 63 percent in UK, 75 percent in Germany, 52 percent in USA, 80 percent in Japan and 96 percent in South Korea. A large number of the workforce have little or no job skills, making them largely unemployable (The Ministry of Skill Development and Entrepreneurship, 2014). Hence to address this skill gap, a distinct Ministry was established in November 2014 and named as Ministry of Skill Development and Entrepreneurship. Subsequent year skill India was announced and many initiatives were carried out. In this view, NEP 2020 is also one of the endeavors to instill vocational education from the elementary stage.

### *Objectives of the Study*

- To assess the National Education Policy in creating new vistas of skill development among the upcoming generation
- To explore avenues to implement the National Education Policy with the help of Social Work professionals

### **Method and Materials**

The present study was based on the National Education Policy-2020 policy document hence document analysis method was adopted. The study was based on content analysis; therefore, secondary data was drawn from various sources such as web site of the human resource development ministry, blogs, journal articles and policy copy related to the National Education Policy 2020 India and the

Social Work profession were brought interface and analyzed role of Social Work profession in effective implementation of the NEP- 2020. Based on School Social Workers already appointed in private international schools the role of School Social Workers is classified into three categories namely facilitator, counselor and liaison.

### **Results and Discussion**

The role of the school social worker, as envisaged by the National Education Policy 2020, is crucial, especially when problems with scholastic development and facilitating in school complex level for achieving the essence of the education policy. A school complex is essentially a network of neighborhood schools managed by one secondary school. These schools will work together, sharing teaching, staff, and infrastructure resources (Jolad, 2020). When children are malnourished or ill, they are unable to learn optimally. As a result, children's nutrition and health (including mental health) will be discussed in terms of nutritious meals and the integration of well-trained social workers, counselors, and community engagement into the schooling system.

#### *Facilitator*

The second goal of NEP 2020 is to achieve universal school participation by closely monitoring students and their learning levels to ensure that they (a) are enrolled in and attending school, and (b) have enough opportunities to catch up and re-enter school if they have fallen behind or dropped out. Appropriate facilitating systems must be placed to provide equal and quality education to all children up to the age of 18 from the foundational Stage through Grade 12. Counselors or well-trained social workers linked to schools/school complexes and teachers can work with students and their parents on a continuous basis, as well as move around and collaborate with communities, to ensure that all school-age children participate and learn in school. Teachers in very small schools will no longer be isolated; instead, they will become a part of work with wider school complex groups, sharing best practices and working collaboratively to ensure that all children must understand. To better support teachers and build an effective learning atmosphere, school complexes could share counselors, trained social workers, technical and maintenance personnel, and so on.

It will also be essential to consider research that determines which measures are especially effective for certain socio-economically disadvantaged groups (SEDGs). For example, providing bicycles and organizing cycling and walking groups to provide access to school have been shown to be particularly efficient ways in raising participation of girl students - even over shorter distances - due to the safety benefits and comfort provided to parents. For certain children with disabilities, one-on-one teachers and tutors, peer tutoring, open schooling, appropriate infrastructure, and appropriate technological measures to ensure access can be extremely effective. Schools that provide high-quality early childhood care and education (ECCE) reap the greatest benefits for children from low-income families. Meanwhile, counselors and/or well-trained social workers who work with and connect with students, parents, schools, and teachers to improve attendance and learning outcomes have been shown to be especially successful for children from low-income families living in urban areas.

#### *Counselor*

Pupil, parental and teacher's counsellings are required wherever necessary, hence school social worker plays a pivotal role in schools. Whenever these stakeholders



come across role conflict or adjustment problems and any kind of psychosocial issues, there is a need for social work intervention. Students will be sensitized as a result of this new school culture, which will be implemented by teachers, trained social workers, and counsellors, as well as corresponding changes to introduce an inclusive school curriculum. Early in the school curriculum, material on human values such as respect for all people, empathy, tolerance, human rights, gender equality, nonviolence, global citizenship, inclusion, and equity will be included. It will also require a more in-depth understanding of different cultures, religions, languages, gender roles, and so on in order to sensitize and cultivate respect for diversity (Human Resource Development Ministry, 2020).

### Liaison

The School Social Worker plays a liaison role with parents, teachers, pupils, the school and the community. Because all stakeholders' participation is required for educational development however school social worker works as a liaison between these stakeholders. All efforts will be made to ensure that community members participate in adult education. While traveling through their communities to track and ensure the participation of non-enrolled students and dropouts, social workers/counselors will be asked to collect data on parents, adolescents, and others interested in adult education opportunities as learners and teachers/tutors. After that, the social workers/counselors will connect them with local Adult Education Centers (AECs). Adult education opportunities will also be widely publicized, through advertisements and announcements, as well as events and initiatives of NGOs and other local organizations (Human Resource Development Ministry, 2020).

The process of learning is critical for students in both classroom and field settings to help them acquire, practice, and improve the values, skills, and knowledge required for the profession. Learning enables students to become competent and ethical professional social workers, and as such, it may be viewed as a developmental process that typically begins with students' entrance to their educational programs and continues through their field placement with social work agencies (Dewey, 1997; Hager, 2005; Mezirow, 2000).

This National Education Policy envisions an education system rooted in Indian ethos that directly contributes to the long-term transformation of India, or Bharat, into an equitable and vibrant knowledge society by providing high-quality education to all, thereby transforming India into a global knowledge superpower. The Policy envisions our institutions' curriculum and pedagogy instilling in students a deep sense of reverence for the Fundamental Duties and Constitutional values, a sense of belonging to one's nation, and a conscious awareness of one's roles and responsibilities in a changing world. The Policy's vision is to instill in learners a deep sense of pride in being Indian, not only in thought but also in spirit, intellect, and deed, as well as to cultivate knowledge, skills, values, and dispositions that promote responsible commitment to human rights, sustainable development and living and global well-being, reflecting a truly global citizen.

### Conclusion

India is one of the youngest nations in the world. It is also considered the next big economic power because 62 percent of the population falls between the working age of 15-59 years. More demographic dividend we have that supposed to be utilized by instilling skills and creating employability through education is the need of the hour. The NEP 2020

drafting committee made a comprehensive effort to devise a policy that takes into account state/UT governments, expert perspectives, global best practices in education, field insights, and stakeholder input. The goal is lofty, but the implementation roadmap will determine whether it truly fosters an all-inclusive education that prepares students for jobs. Effective implementation of the NEP 2020 can be possible with the collaboration of non-profit organizations where trained social workers are working or appointing trained social worker to implement the policy outlines in various levels of education whether the elementary or higher education for changing the mindset of parents and teachers from old education system to new educational paradigm, reimagining and adopting pedagogical changes, rethinking assessments, training educators, fund raising from various stakeholders for infrastructure improvement and adopting a bottom up approach.

The Government of India strives to set a global standard in all spheres; it is evident from the all effort of the Government, introduction of skill India, Digital India. National Education Policy and 'Atmanirbhar Bharat' paved the way to create India as a superpower nation.

Social Work profession also works with the motto of 'Helping People to Themselves' it is on par 'Atmanirbhar Bharat' making India self-reliant by facilitating through various programmers to the needy for empowering and making them independent.

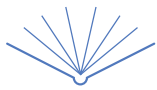
It is the time for the transformation of Social Work education by adopting school social work specialization (elective) for imparting extensive knowledge as well as practical exposure to cultivate skills for intervention with schools even more effectively. In addition to that, intensive research studies need to be initiated to develop intervention models for practitioners to practice school social work even more effectively.

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**Table 1.** *The New Education Policy 2020 Desired Goals Accomplishment through Trained Social Workers*

The New Education Policy outlines	Role of the trained social worker
Recognizing, identifying, and fostering the unique capabilities of each student, by sensitizing teachers as well as parents to promote each student's holistic development in both academic and non-academic spheres.	Training programmes for teachers and parents to recognize, identify and foster the unique capabilities of each student. Rendering parental education and counseling wherever it requires Counseling (group, individual and/or family).
Flexibility, so that learners have the ability to choose their learning trajectories and programmes, and thereby choose their own paths in life according to their talents and interests.	Educating the pupils as preventive functions of Social Work and rendering counselling as a curative function of Social Work with pupils whenever they are at a crossroad of selecting the best possible paths of life.
No hard separations between arts and sciences, between curricular and extra-curricular activities, between vocational and academic streams, multidisciplinary and a holistic education across the sciences, social sciences, arts, humanities, and sports for a multidisciplinary world in order to ensure the unity and integrity of all knowledge.	Preparing teachers and students for the new education culture by rendering training programmes. Facilitate to have multidisciplinary and holistic education across different streams of science.
Creativity and critical thinking to encourage logical decision-making and innovation. Life skills such as communication, cooperation, teamwork, and resilience.	Providing life skill education Providing crisis intervention. Developing intervention strategies to increase academic success. Assisting with conflict resolution and anger management. Helping the child develop appropriate social interaction skills. Assisting the child in understanding and accepting self and others.
Emphasis on conceptual understanding rather than rote learning and learning-for-exams.	Facilitating to use Social Group Work to involve in many group activities to promote learning by doing. Connecting with students, parents, schools, and teachers in order to improve attendance and learning outcomes have been found to be especially effective for children in poor urban areas.
Ethics and human & Constitutional values like empathy, respect for others, cleanliness, courtesy, democratic spirit, spirit of service, respect for public property, scientific temper, liberty, responsibility, pluralism, equality, and justice.	Conducting sensitizing sessions viz., gender, caste, religion, region, race, culture sensitivity Conducting constitutional perspective building sessions. Assisting in developing positive behavioral intervention strategies.
Issues related to the learning of student must be addressed.	Working with parents to facilitate their support in their children's school adjustment. Alleviating family stress to enable the child to function more effectively in school & community. Assisting parents to access programs available to students with special needs. Assisting parents in accessing and utilizing school and community resources.
Focus on regular formative assessment for learning rather than the summative assessment that encourages today's 'coaching culture	Working with those problems in a child's living situation that affect the child's adjustment in school. (home, school, and community)
Extensive use of technology in teaching and learning, removing language barriers, increasing access for Divyang (differently-abled) students, and educational planning and management	Preparing a social or developmental history on a child with a disability. Sharing of social workers and counsellors, and School Complex Management Committees to address the extensive use of ICTs
Teachers and faculty as the heart of the learning process – their recruitment, continuous professional development, positive working environments and service conditions	Providing staff with essential information to better understand factors (cultural, societal, economic, familial, health, etc.) affecting a student's performance and behavior. Assessing students with mental health concerns. Developing staff in-service training programs. Assisting teachers with behavior management. Providing direct support to staff.
Education is a public service; access to quality education must be considered a basic right of every child	Mobilizing family, school, and community resources to enable the child to learn as effectively as possible in his or her educational program.
Substantial investment in a strong, vibrant public education system as well as the encouragement and facilitation of true philanthropic private and community participation.	Sought co-ordination between all stakeholders and mobilizing community participation and true philanthropic private facilitation. Voluntarism can be tapped to bridge the infrastructural and qualitative gaps. Obtaining and coordinating community resources to meet students' needs. Helping school districts receive adequate support from social and mental health agencies. Advocating for new and improved community/school service to meet the needs of students and families. Helping the system respond effectively to each child's needs.



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# Future Anxiety of French as a Foreign Language Trainee Teachers in Turkey: A Mixed Explanatory Research with Faculty of Education Students\*

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## Abstract

The lack of tenured positions for French as a Foreign Language (FFL) teachers in the public sector in Turkey is a recurrent problem. The aims of this research are therefore to determine if this situation affects the level of anxiety due to the non-tenure of FFL trainee teachers, to establish the possible causes of this anxiety and to understand if they are confronted with feelings of incertitude and / or doubt towards their future. Another aim of this research is to investigate the impact of non-tenure on the academic motivation of FFL trainee teachers. The research was conducted following a mixed explanatory method in two consecutive stages starting with the collection of quantitative data through the anxiety scale due to the non-tenure of trainee teachers and the Academic Motivation Scale (AMS). The sample for the quantitative phase involved 428 FFL trainee teachers from 6 Faculties of Education in Turkey. Semi-directed interview forms were used for the collection of qualitative data from 18 FFL trainee teachers from 2 universities involved in the quantitative phase. The research was conducted during the academic year 2019-2020. The findings of our research focus on the problems that FFL trainee teachers may encounter due to the lack of job positions for teachers in the public sector. The results allowed a reflection on solutions that could be envisaged in higher education and at the Ministry of Education in Turkey (MoNE).

**Keywords:** French as a Foreign Language, Future Anxiety, Motivation, Mixed Explanatory Method, Tenure, Trainee Teacher

## Introduction

The French language was the most taught foreign language in Turkey until the 1950s when English became the new Lingua Franca and slowly took over French in schools. As a result, the number of French as a Foreign Language (FFL) teachers in Turkey dramatically dropped (Demircan, 1988). Nowadays, the number of FFL teachers in public and private schools in Turkey (primary to secondary) only reaches 1.081 while the number of English as a Foreign Language (EFL) teachers rockets to 37.513 (Turkish Ministry of Education, 2019). Unfortunately, the number of tenured posts in public schools for FFL teachers has stagnated at 1 or 2 per year over the past few years, as shown in Table 1.

However, 10 Faculties of Education in Turkey still train FFL trainee teachers and around 200 of them graduate each year. Additionally, FFL trainee teachers need to succeed in the Turkish recruitment exam for teachers in order to be able to teach in the public sector in Turkey and therefore obtain a tenured post. This is the problem that FFL trainee teachers have to face as so many of them graduate each year compared to the number of tenured posts on offer. That is why this situation can be a cause of anxiety and loss of academic motivation among FFL trainee teachers.

The word anxiety comes from the greek "anxietas" and includes terms such as a constant and durable apprehension, fear or uncertainty and is a basic

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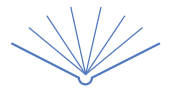
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**Table 1.** Number Of Tenured Posts For Foreign Language Teachers In Secondary State Schools In Turkey Published By The Turkish Ministry Of Education For The Years 2017, 2018, 2019, 2020 and 2021

Branch	Number of tenured posts March 2017(a)	Number of tenured posts March 2018(b)	Number of tenured posts November 2018(c)	Number of tenured posts March 2019(d)	Number of tenured posts January 2020 (e)	Number of tenured posts June 2020 (f)	Number of tenured posts March 2021 (g)
English	2.193	2.002	2.038	1.960	1.731	1.739	1.938
German	105	98	101	200	138	200	210
French	1	3	1	1	1	1	0

(a)/MEB, 2017; (b)/MEB, 2018a; (c)/MEB, 2018b; (d)/MEB, 2019; (e)/MEB, 2020a; (f)/MEB, 2020b; (g)/MEB, 2021

feeling in human beings (Kaya & Varol, 2004; Köknel, 2013, p. 17). Spielberger (1972) adds that anxiety is an unpleasant experience that involves feelings of apprehension, tension and fear. In education, anxiety can affect the learning capacity of students. Indeed, up to a certain degree, anxiety may not have any effect on the learning capacity of students but passed a certain threshold, it can have a facilitating effect. However, too high level of anxiety can have a debilitating effect on the students' learning capacity (Cüceloğlu, 2018).

Previous research focused on numerous factors for anxiety and academic achievement is one of them, as this type of anxiety can indeed have else positive or negative effects on the students' academic results (Bozkurt & al, 2017). In Turkey, most researches focus on occupational and self-efficacy anxiety of teachers and trainee teachers. This includes the relationships with the school management, colleagues, students and their parents, financial anxiety, anxiety due to technical competences or self-development and finally anxiety linked to the subject taught (Sadıkoğlu & al., 2018).

In foreign languages, language anxiety is also a cause of anxiety that should not be neglected as it can have a negative effect on the students' learning (Çapan & Aslım Yetiş, 2016). Especially for trainee teachers as they may experience language anxiety in two different ways. First of all, as learners of a foreign language they might feel some anxiety due to the fear of being judged by their peers or teacher, the fear of failure, the fear of being in an unfamiliar situation or the relationship with their teacher (Bekleyen, 2008; Aslım Yetiş, 2012). Then, as trainee teachers, if the language taught is not their mother tongue, they might feel some anxiety due to the perception of their language skills, their lack of experience, the fear of being judged by their students and/or other teachers or the lack of interest from learners (Aydın & Ustuk, 2020).

Another cause for anxiety is the Turkish recruitment examination for teachers (KPSS), a compulsory exam in order to obtain a tenured post in Turkish state schools. Indeed, the preparation for this exam, the fear of failure and occupational anxiety seem to be recurrent in trainee teachers taking the exam (Doğan Altun & al., 2017). Unfortunately, obtaining a good grade at this national exam is not sufficient for FFL trainee teachers as they are then faced with only one or two tenured posts each year for the whole country. This problem is not specific to FFL trainee teachers and various research have put forward that a lack of tenured posts for trainee teachers could lead to anxiety problems (Yalçın, 2014).

Three previous studies administered the anxiety scale due to non-tenure of trainee teachers but none of them studied FFL trainee teachers focusing on other majors (Eskici, 2016; Ince-Aka & Yılmaz, 2018; Özcan, 2019). That is why this research is all the more important.

But if trainee teachers experience anxiety, does it affect their academic motivation? According to the Self-determination

Theory, motivation is "a hypothetical construct that is used to define the internal and/or external forces that generate the initiation, the direction, the intensity and the persistence of one's behaviour" (Vallerand & Thill, 1993, as cited in Vallerand & al, 2019). Moreover, Eison & Milton reckon that learners that are extrinsically motivated tend to feel more anxious than learners that are intrinsically motivated (Eison & Milton, 1981, as cited in Deci and Ryan, 1985). In some cases, anxiety can also be a factor of motivation if not extreme (Develi, 2006). Academic motivation and anxiety are therefore connected.

The aims of this research are therefore to determine if this situation affects the level of anxiety due to non-tenure of FFL trainee teachers, to establish the causes of this anxiety and to understand if they are confronted with feelings of incertitude towards their future. Another aim of this research is to investigate the impact of non-tenure on their academic motivation.

## Method

### Research Design

The present research was carried out following a mixed explanatory design. It includes a quantitative phase using two scales followed by a qualitative phase carried out through semi-directed interviews that helps verify and comprehend the quantitative results obtained.

### Study Group

#### Quantitative sample

The sample for the quantitative phase of the research includes 428 trainee teachers from the FFL departments of 6 Turkish Faculties of Education in Turkey during the academic year 2019-2020: Anadolu University, Bursa Uludağ University, Dokuz Eylül University, Gazi University, Hacettepe University and Marmara University. The minimum size for the sample was calculated using the method from Bartlett, Kotrlik & Higgins (2001) so that the sample size is representative of the population.

#### Qualitative sample

A convenience sampling method was used to select trainee teachers from the FFL departments of Universities 1 and 2 who participated in the quantitative phase of the research. Moreover, maximum scale sampling was privileged in selecting trainee teachers showing the highest and the lowest levels of anxiety due to non-tenure and students spread across the years of study (Table 2).

#### Data Collection Tools

The first scale used during the quantitative phase was the "Anxiety Scale due to Non-Tenure of Trainee Teachers" by Eskici (2016) which is a 5 point Likert scale consisting of 13

**Table 2.** Summary Of The Quantitative And Qualitative Samples

Quantitative Sample			Qualitative Sample		
Independent variables	Study Group	Total Number of Participants	Independent variables	Study Group	Total Number of Participants
Gender	Female	303	Gender	Female	10
	Male	125		Male	8
University	University 1	104	University	University 1	9
	University 2	46		University 2	9
	University 3	67			
	University 4	53			
	University 5	90			
	University 6	68			
Socio-economical Background	≤ 3.700 TL*	162	Socio-economical Background	≤ 3.700 TL*	4
	3.700 - 7.400 TL	174		3.700 - 7.400 TL	11
	≥ 7.400 TL	75		≥ 7.400 TL	3
Year of Study	1st year	140	Year of Study	1st year	4
	2nd year	92		2nd year	3
	3rd year	94		3rd year	4
	4th year	102		4th year	7
Total		428	Total		18

\*TL: Turkish Lira

items distributed into 2 sub-dimensions: fear of non-tenure and self-perception.

The second scale was the "Turkish version of the Academic Motivation Scale (AMS)" adapted by Can (2015) which is a 7 points Likert scale consisting of 28 items distributed into 3 sub-dimensions: extrinsic motivation, intrinsic motivation and amotivation.

For the qualitative phase, questions for the semi-directed interviews were prepared according to the results obtained from the quantitative phase. The interview forms were then checked by 3 experts and pilot interviews were conducted as recommended by Adıgüzel (2016) for credibility purposes.

### Data Analysis

For the first scale of the quantitative phase, a value contained between -1,96 and +1,96 to the Skewness test of normality allowed us to perform parametric tests. But the Skewness and Kurtosis test of normality for the second scale only allowed the use of non-parametric tests. Moreover, in order to better compare the results with the first scale, the results of the AMS scale were transformed into a 5 point Likert scale. Both scales were analysed according to 4 independent variables: gender, university, year of study and socio-economical background of the participants.

For the qualitative phase, semi-directed interviews were realised during the spring semester 2019-2020. Once the interviews were completed, they were transcribed to be analysed. A content analysis was then realized using a moderate inductive analysis as described by Anadon & Savoie-Zajc (2009) and the consensus of coding was verified by experts as recommended by Miles & Huberman (1994). The quantitative and qualitative results were analysed separately and then a mixed analysis of the research was carried out.

In order to carry out this research, approval from Anadolu University Scientific Research and Publishing Ethic Committee for Humanities and Social Sciences was obtained as well as permission from the universities where the research was carried out.

### Ethical Permission Information of the Study

In this study, all the rules stated in the Committee on Publication Ethics (COPE) were followed.

### Ethics Committee Permit Information

Ethics Board that Conducts the Assessment: Anadolu University, Scientific Research and Publishing Ethic Committee for Humanities and Social Sciences  
Date of Assessment Decision: 13/09/2019  
Assessment Document Number: 71358

## Results

### Quantitative Results

The findings for the anxiety scale due to the non-tenure of trainee teachers by Eskici (2016) were analysed using parametric tests.

The sub-dimensions of anxiety fear of non-tenure and self-perception (Table 3) respectively show a mean value of  $X=2,97$  and  $X=3,08$ . The mean value for the full scale reached  $X=3,00$ . These results do not reflect a level of anxiety due to non-tenure as high as could have been expected, as shown in Table 3.

The results according to the sex of the participants (Table 4) show a slightly higher level of anxiety due to non-tenure for female trainee teachers compared to males, but no significant differences were reported with  $p>,05$ . Likewise, no



**Table 3.** Non-tenure anxiety of FFL trainee teachers

Sub-dimensions	Number of items	N	SD	Mean
Fear of non-tenure	10	428	1,14	2,97
Self-perception	3	428	1,32	3,08
Total	13	428	1,16	3,00

**Table 4.** T-Test Results For Non-Tenure Anxiety According To Gender Of FFL Trainee Teachers

Sub-dimensions	Gender	N	M	SD	t	p
Fear of non-tenure	Female	303	3,02	1,11	-1,408	0,160
	Male	125	2,85	1,20		
Self-perception	Female	303	3,13	1,29	-1,399	0,204
	Male	125	2,95	1,37		
Total	Female	303	3,05	1,13	-1,399	0,163
	Male	125	2,87	1,21		

**Table 5.** Differences Between Universities For Non-Tenure Anxiety Of FFL Trainee Teachers Of The Same Sex (Two Factors Variance Analysis - Anova)

Sex	Sub-dimensions	University	N	M	Source of variance	Sum of squares	SD	F	Sig. p	Post Hoc -Tukey
Male	Fear of non-tenure	Univ. 1	37	2,29	Inter-groups	23,27	5	3,596	0,005*	1-5
		Univ. 2	11	2,95						
		Univ. 3	19	2,88	Intra-groups	154,01	119			
		Univ. 4	14	2,65						
		Univ. 5	22	3,40	Total	177,29	124			
		Univ. 6	22	3,30						
Levene : 2,168 p=0,062										
Male	Self-perception	Univ. 1	37	2,37	Inter-groups	21,93	5	2,484	0,035*	1-6
		Univ. 2	11	3,36						
		Univ. 3	19	3,07	Intra-groups	210,15	119			
		Univ. 4	14	2,83						
		Univ. 5	22	3,21	Total	232,08	124			
		Univ. 6	22	3,45						
Levene : 1,045 p=0,394										
Male	Total	Univ. 1	37	2,31	Inter-groups	22,43	5	3,329	0,008*	1-5
		Univ. 2	11	3,05						
		Univ. 3	19	2,92	Intra-groups	160,36	119			
		Univ. 4	14	2,69						
		Univ. 5	22	3,35	Total	182,78	124			
		Univ. 6	22	3,34						
Levene : 1,850 p=0,108										

\*p<.05

significant differences were reported according to the other independent variables.

In general, no significant differences were reported according to the university of origin either (Table 5). However, significant differences were found between male trainee teachers. The level of anxiety due to non-tenure for male trainee teachers at University 1 was significantly lower than those at Universities 5 and 6 (Table 5).

In addition, significant differences were reported at University 1 between male and female trainee teachers, as shown in Table 6. The latter showed significantly higher levels of anxiety due to non-tenure for both sub-dimensions with  $p < 0.5$ . Indeed, the results for the fear of non-tenure show a mean level for female trainees  $M = 2,93$ , whereas the mean for male trainees is only  $M = 2,29$ . Likewise, concerning self-perception, the mean for female trainee teachers is  $M = 3,07$  and for male trainees  $M = 2,37$ .



**Table 6.** Differences Per University For The Sub-Dimensions Of The Scale Of Anxiety Due To Non-Tenure According To The Sex (T-Test For Independent Samples)

University	Sub-dimensions	Sex	N	M	SD	t	p	
University 1	Fear of non-tenure	Female	67	2,93	1,05	-3,030	0,003*	
		Male	37	2,29	0,99			
	Levene : 0,165 p= 0,686							
	Self-perception	Female	67	3,07	1,27	-2,781	0,006*	
		Male	37	2,37	1,17			
	Levene : 1,464 p=0,229							
Total	Female	67	2,96	1,08	-3,011	0,003*		
	Male	37	2,31	1,02				
Levene : 0,454 p=0,502								

\*p < .05

**Table 7.** Descriptive Statistics for the Academic Motivation Scale

Sub-dimensions	Number of items	N	Mean	SD
Extrinsic Motivation	12	428	3,65	0,73
Intrinsic Motivation	12	428	3,49	0,87
Amotivation	4	428	1,94	1,05
Total	28	428	3,64	0,67

**Table 8.** Mann Whitney U Test Results For Levels Of Academic Motivation According To Gender

Sub-dimensions	Gender	N	M	SD	Mean rank	Z	MWU	p
Extrinsic Motivation	Female	303	3,76	0,69	233,84	-5,040	13076,50	0,000*
	Male	125	3,38	0,75	167,61			
Intrinsic Motivation	Female	303	3,57	0,87	226,73	-3,186	15232	0,001*
	Male	125	3,29	0,83	184,86			
Amotivation	Female	303	1,81	0,99	199,63	-3,927	14432	0,000*
	Male	125	2,25	1,14	250,54			
Total	Female	303	3,74	0,65	234,85	-5,299	12772	0,000*
	Male	125	3,39	0,66	165,18			

\*p < .05

The second scale administered was the Turkish Version of the Academic Motivation Scale adapted by Can (2015). The results were obtained using non-parametric tests.

As shown in Table 7, the mean for the full scale  $M = 3,64$  (out of 5) shows a higher level of academic motivation than that of anxiety due to non-tenure ( $M = 3,00$ ). Significant differences were reported according to the sex, university and socio-economical background of the trainee teachers.

Significant differences were reported between gender for all the sub-dimensions (Table 8) with female trainee teachers showing overall significantly higher levels of extrinsic (Female  $M = 3,76$ , Male  $M = 3,38$ ), intrinsic (Female  $M = 3,57$ , Male  $M = 3,29$ ) and total (Female  $M = 3,74$ , Male  $M = 3,39$ ) motivation and a significantly lower level of amotivation (Female  $M = 1,81$ , Male  $M = 2,25$ ).

As shown in Table 9, significant differences between universities were found for extrinsic motivation only. First, a test of Kruksal Wallis put forward some significant differences between universities ( $p < .05$ ) and then a Mann Whitney U test

showed that the level of extrinsic motivation at University 1 ( $M = 3,47$ ) is significantly lower than that of University 4 ( $M = 3,89$ ) and University 2 ( $M = 3,80$ ) Universities. Moreover, the levels of extrinsic motivation between University 4 ( $M = 3,89$ ) and University 1 ( $M = 3,89$ ), University 3 ( $M = 3,89$ ) and University 6 ( $M = 3,89$ ) differ significantly (Table 9).

Some significant differences were reported for extrinsic motivation levels according to the socio-economical background of the FFL trainee teachers (Table 10). The level of extrinsic motivation for trainee teachers from the lowest income groups showed higher levels of extrinsic motivation (Group 1  $M = 3,67$  and group 2  $M = 3,71$ ) compared to the higher income group (Group 3  $M = 3,42$ ). However, no significant differences in academic motivation were reported according to the year of study.

Following the analysis of both scales, tests of correlation between anxiety due to non-tenure and academic motivation were performed as shown in tables 11 and 12.



**Table 9.** *Kruksal Wallis And Mann Whitney U Tests For The AMS According To The University Of FFL Trainee Teachers*

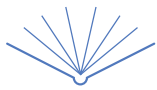
Sub-dimensions	University	N	M	SD	Mean Rank	X <sup>2</sup> KHW	p	MWU
Extrinsic Motivation	Univ. 1	104	3,47	0,82	190,47	11,969	0,035*	1-2 1-4 3-4 3-6
	Univ. 2	46	3,80	0,69	238,82			
	Univ. 3	67	3,60	0,73	205,69			
	Univ. 4	53	3,89	0,60	252,48			
	Univ. 5	90	3,70	0,70	222,41			
	Univ. 6	68	3,60	0,64	203,41			
Intrinsic Motivation	Univ. 1	104	3,48	0,83	213,60	3,453	0,630	
	Univ. 2	46	3,66	0,75	238,91			
	Univ. 3	67	3,37	0,94	199,19			
	Univ. 4	53	3,50	0,76	213,08			
	Univ. 5	90	3,54	0,93	221,67			
	Univ. 6	68	3,41	0,93	206,06			
Amotivation	Univ. 1	37	1,70	0,92	187,26	9,751	0,083	
	Univ. 2	11	1,77	0,82	205,10			
	Univ. 3	19	2,22	1,19	239,88			
	Univ. 4	14	2,07	1,11	227,75			
	Univ. 5	22	1,93	1,03	214,31			
	Univ. 6	22	2,05	1,14	227,43			
Total	Univ. 1	37	3,60	0,70	209,67	6,039	0,302	
	Univ. 2	11	3,80	0,57	243,16			
	Univ. 3	19	3,53	0,72	194,99			
	Univ. 4	14	3,73	0,58	227,13			
	Univ. 5	22	3,69	0,70	222,64			
	Univ. 6	22	3,57	0,65	201,10			

\*p<.05

**Table 10.** *Kruksal Wallis And Mann Whitney U Tests For The AMS According To The Socio-Economical Background Of FFL Trainee Teachers*

Sub-dimensions	Socio-economical background	N	M	SD	Mean Rank	X <sup>2</sup> KHW	p	MWU
Extrinsic Motivation	≤ 3.700TL**	162	3,67	0,74	210,96	7,149	0,028*	1-3 2-3
	3.700 – 7.400 TL	174	3,71	0,69	215,54			
	≥ 7.400TL	75	3,42	0,78	173,15			
Intrinsic Motivation	≤ 3.700TL**	162	3,51	0,86	210,56	2,306	0,316	
	3.700 – 7.400 TL	174	3,51	0,85	209,86			
	≥ 7.400TL	75	3,32	0,94	187,19			
Amotivation	≤ 3.700TL**	162	2,05	1,09	216,98	4,192	0,123	
	3.700 – 7.400 TL	174	1,86	1,07	192,23			
	≥ 7.400TL	75	1,95	0,93	214,23			
Total	≤ 3.700TL**	162	3,64	0,68	207,83	4,089	0,129	
	3.700 – 7.400 TL	174	3,68	0,64	214,72			
	≥ 7.400TL	75	3,47	0,74	181,81			

\*p<.05, TL: Turkish Liras

**Table 11.** Spearman Correlation Test Between Anxiety Due To Non-Tenure And Academic Motivation Of Trainee Teachers Of FFL

Sub-dimensions		Fear of non-tenure	Self-perception	Total (Full scale)
Extrinsic Motivation	Spearman Correlation Coefficient	0,045	0,036	0,043
	$p$	0,354	0,462	0,372
Intrinsic Motivation	Spearman Correlation Coefficient	-0,070	-0,013	-0,057
	$p$	0,150	0,796	0,242
Amotivation	Spearman Correlation Coefficient	0,112	0,063	0,102
	$p$	0,020*	0,193	0,035*
Total	Spearman Correlation Coefficient	-0,047	-0,002	-0,037
	$p$	0,329	0,960	0,449

\* $p < .05$ .**Table 12.** Spearman Correlation Test Between Anxiety Due To Non-Tenure And Academic Motivation Of Trainee Teachers Of FFL According To Gender

Gender	Sub-dimensions		Fear of non-tenure	Self-perception	Total (Full scale)
Female	Extrinsic Motivation	Spearman Correlation Coefficient	0,124	0,066	0,112
		$p$	0,031*	0,251	0,052
Male	Intrinsic Motivation	Spearman Correlation Coefficient	-0,189	-0,122	-0,174
		$p$	0,035*	0,176	0,053

\* $p < .05$ .

The test of correlation between all the sub-dimensions of both scales (Table 11) showed a positive correlation between the fear of non-tenure ( $p=.02$ ) and the overall level of anxiety due to non-tenure ( $p=.035$ ) and the levels of amotivation of FFL trainee teachers. According to these results, when anxiety levels rise, amotivation among trainee teachers also increases. Another test of correlation was performed according to gender.

Confirming the previous results, a positive correlation between fear of non-tenure and amotivation for female trainee teachers was found as shown in Table 12. Meaning that as the level of anxiety increases, the level of amotivation of female trainee teachers also increases. In addition, a negative correlation between the fear of non-tenure and amotivation for male trainee teachers was reported. Put differently, when the level of anxiety of male trainee teachers rises, their level of intrinsic motivation decreases.

### Qualitative Results

#### General anxiety of the participants

The results showed that the majority of participants (13 out of 18) felt anxiety in general and that nearly all participants (16 out of 18) felt anxiety towards their future. This anxiety includes anxiety due not only to non-tenure but also due to the KPSS exam, the search for a job or the fear of not being able to provide for one's family.

*Of course, I feel anxious about my future. Even if I don't feel it in my everyday life, I can feel it when I think about the future. Because it is all uncertain for me. (P1)*

#### Reasons for anxiety about the future

The anxiety that participants feel is therefore a broader type of anxiety about their future and the reasons for it are diverse. With the near inexistent number of tenure posts each year for

FFL trainee teachers, anxiety due to non-tenure is indeed a cause for anxiety for 7 participants out of 18. But before being able to apply for tenure, trainee teachers have to pass the recruitment exam for teachers (KPSS). This is again a great cause of anxiety for FFL trainee teachers (10 out of 18) who experience anxiety. Indeed, even if they obtain the highest possible score in the exam, their tenure is still improbable with only 1 or 2 posts available each year.

*Anxiety because if I had to take the KPSS exam, I have the feeling that I would fail. That type of anxiety. (P3)  
Actually, it stresses you. [...] You have to work particularly hard to prepare for this exam. (P11)*

Another important source of anxiety for FFL trainee teachers is the fear of not finding a satisfying job and not being able to be financially independent and support their family, leading to trainee teachers feeling unhappy in life.

*If I am not happy professionally or if I don't earn enough to support myself, these are two things that add more anxiety. (P12)*

Following an FFL programme can also be a source of anxiety for trainee teachers. Indeed 10 participants out of 18 consider that the FFL study programme is difficult.

*Many students give up before graduating from FFL because they can't make it. (P16)*

Moreover, the majority of participants deem their linguistic skills in French inadequate, leaving trainee teachers feel anxious at the idea of teaching a language they don't fully master.

*Concerning my level of French, it is not enough for now. Unfortunately, I have doubts about it [my level of French]. (P3)*



*Without knowing the basics in French, we are taught how to teach. [...] But as for French, it is inadequate. (P17)*

Some trainee teachers also experience some anxiety after the first year of preparatory course when they start their first year at the Faculty of Education.

*After the preparatory year, I arrived at the faculty. I was like a fish out of water. It was difficult. (P18)*

Actions Taken by the Participants to Address Anxiety about the Future

Anxiety is a reality for the majority of the participants and they anticipate a non-tenure and try to plan their careers accordingly. Most FFL trainee teachers (17 out of 18) claim that they are willing to teach French in private schools or courses. Finding a job directly linked to the French language in the private sector (private schools, translation, tourism etc.) is the most common answer from the participants.

*I want to work in private schools. Actually, that's my first choice. (P17)*

Some are also willing to work in the private sector where they could put their French to profit:

*I think I could do some translations. Or I would be interested in becoming a tourist guide. (P1)*

Most participants (16 out of 18) are also interested in going to work abroad.

*Going abroad is one of the reasons why I decided to study foreign languages. (P9)*

But some participants are also ready to work in different sectors of activity. It can range from working for foreign private companies to being a hostess, working in the trade sector, gastronomy or music sector.

*We can use it [French] in private companies. Or to work for foreign companies. There are many private companies. There are many sectors where to get experience and work. You can apply to French companies. (P16)*

We can therefore deduce that FFL trainee teachers are aware of the difficult situation they have to face and have accepted it. In fact, they deem it unlikely that they will obtain a tenured post.

*I am sure that I will not get a tenured post. I have given up hope. (P3)*

This desperate situation could have had an effect on the trainee teachers' academic motivation but it seems that this is not the case.

*I would say that my motivation has increased. I started to take my responsibilities and the more I assume those responsibilities, the happier I am. (P8)*

*I worked hard to improve my French and my motivation has increased. (P18)*

Overall, it would seem that the participants have accepted the situation and do not expect to obtain a tenured post. They have already thought about other available job opportunities in the private sector. That is why the lack of tenured posts does not seem to affect their academic motivation.

Solutions Put Forward by the Participants

The participants also mentioned several solutions in order to improve the number of tenured posts offered each year to FFL trainee teachers by the Turkish Ministry of Education (MEB). The opportunity for high school students to choose their second foreign language is the most common with 12 out of 18 participants thinking it would be beneficial.

*In my opinion, all students should be able to learn a second foreign language and to choose among several languages. (P2)*

Moreover, they recommend starting learning a second foreign language earlier (primary or secondary school).

*In my opinion, just like for English, there should be compulsory lessons in French or German, taking into account the wishes of the students, as early as primary school. (P7)*

*These solutions would allow the creation of more tenured posts for FFL trainee teachers as one participant mentioned: "There should be the possibility for students to choose French [as a foreign language] for teachers to be able to get a tenured post." (P17)*

At the level of the Turkish Higher Education Council (YÖK), the participants addressed the need to balance the number of tenured posts for FFL trainee teachers with the number of FFL students graduating from Faculties of Education each year.

*There are 10 faculties [that offer training in FFL] and 250 graduates. Like I said, the number of tenured posts could be higher. They wouldn't stay unemployed. (P3)*

*If this department is available at university, then the number of graduate students each year should be examined. If there are 200 / 250 graduates for only 3 tenured posts, then it should be looked into and the situation evaluated. (P18)*

Finally, the academic staff educating trainee teachers of FFL has an important role to play. Several participants mentioned the importance of keeping the students motivated and adapting to new generations of students.

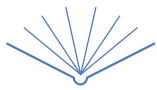
*[...] University academic staff should not impose the idea that our branch has no job opportunities. I think it is very important. (P5)*

*I hope that our teachers will adapt to today's World. Because students from our generation are very different. We use new technologies and our lives are very different from that of our teachers. I hope that they will be able to adapt. (P4)*

The solutions put forward by the participants could lead to changes at different levels (MEB, YÖK or the university) which could have a positive effect on the number of tenured posts available each year for trainee teachers of FFL and on their level of anxiety towards the future.

#### Mixed Results

A mixed analysis was performed with 2 objectives in mind: A complementary objective aiming at understanding the quantitative results and an expansion objective through new elements collected with the qualitative analysis.



### Low level of anxiety of ffl trainee teachers

Overall, a higher level of anxiety due to non-tenure could have been expected. However, the quantitative results of Eskici's scale (2016) showed a mixed picture with averages of 2,97/5 for the fear of non-tenure, 3,08/5 for self-perception and finally 3/5 for the full scale. Moreover, no significant differences were noticed according to the independent variables.

These results can be explained via the results obtained during the qualitative phase. Non-tenure does not seem to create anxiety among the participants in the semi-directed interviews. They feel that it is highly unlikely (14/18 participants) or unlikely (4/18) that they will qualify for a tenured post, claiming that "seeing the situation as it is, it would be absurd to think that I could obtain a tenured post." (P1) FFL trainee teachers are therefore aware of the situation that awaits them after graduating very early in their university studies.

That is why the results of the quantitative phase show lower anxiety levels than expected, as trainee teachers have accepted the situation and start making career plans as soon as they enter university. These plans include working in private schools or courses, working abroad or even in a different sector of activity.

*No lit will not affect me]. Because it's my plan A [a tenured post]. If plan A does not work, I will get on with plan B. (P8)*

*No, it will not affect me because I planned my future accordingly [not obtaining tenure]. (P18)*

Trainee teachers of FFL have the capacity to reflect on the situation and realize the difficulties to obtain a tenured post; they accept the situation and finally reflect on various possible job opportunities.

### Academic motivation and its correlation to future anxiety of ffl trainee teachers

Quantitative results show that the level of extrinsic motivation of trainee teachers reaches  $X=3,65/5$ , of intrinsic motivation  $X=3,49/5$  and for the full scale  $X=3,64/5$ . Moreover, the level of amotivation is rather low with  $X=1,94/5$ . Taking into account the situation FFL trainee teachers face, their level of academic motivation is higher than expected. It appears that most trainee teachers have voluntarily chosen to study FFL at university which has a positive effect on their motivation. Also, as they have accepted the fact that obtaining a tenured post is highly unlikely, it does not have a negative impact on their academic motivation. On the contrary, they start investigating career opportunities that are available for French speakers early in their university studies.

Some significant differences were noticed in the academic motivation during the quantitative phase of the research; in particular concerning socio-economical groups. Indeed, trainee teachers from lower income groups (groups 1 and 2) seem to have a higher level of extrinsic motivation than those from the higher socio-economical group (group 3). These differences can be explained by the fact that students from lower socio-economical groups wish to graduate as early as possible in order to join the labor market and earn a living. Indeed, most participants in the interviews (14 out of 18) claimed that they were eager to be financially independent of their families.

To sum up, the academic motivation of FFL trainee teachers is higher than expected and their level of anxiety due to non-tenure is lower than expected. This is because the anxiety felt by trainee teachers includes other factors leading to a broader type of anxiety.

### A broader type of anxiety: future anxiety

The qualitative phase of the research uncovered some new elements. It is indeed clear that FFL trainee teachers feel anxiety towards their future.

The KPSS exam is a source of anxiety due to the fear of failing and the stress linked to the preparation of the exam itself. The fear of being unhappy in life brings anxiety due to the fear of not finding a suitable job and not being able to earn a suitable living. And finally, studying FFL can be another source of anxiety due to the difficulty of the French language and the lack of linguistic skills felt by participants. This language anxiety is double for FFL trainee teachers: As a learner of French, and as a teacher.

### Hopes and Expectations

FFL trainee teachers are aware of the situation very early in their university studies and therefore do not have much hope of obtaining a tenured post in Turkish state schools. This gives them ample time to reflect on the career opportunities available to them, leading to a level of anxiety lower than could be expected.

They are expecting a change in the situation that according to them could start with the introduction of a second foreign language in schools earlier and the possibility for students to be able to choose their second foreign language. These two options would lead to an increased need for foreign language teachers in Turkish state schools and therefore an increase in the number of tenured posts.

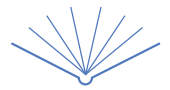
### Discussion, Conclusion and Suggestions

To conclude, the importance of using a mixed method for this study must be stressed. Indeed, it allowed a better understanding of the quantitative results and highlighted new elements in the qualitative phase.

The research highlights the fact that FFL trainee teachers have accepted the situation as it is statistically highly unlikely that they will obtain tenure. Moreover, they have given up the hope of tenure very early in their university studies which leads to a rather low level of anxiety due to non-tenure. Compared to previous researches using the same scale of anxiety due to non-tenure by Eskici (2016), FFL trainee teachers show lower levels of anxiety than trainee teachers from other branches as shown in table 13.

**Table 13.** Summary of Previous Researches' Results of the Anxiety Due to Non-Tenure Scale by Eskici (2016)

References	N	Fear of non-tenure (Mean X)	Self-perception (Mean X)	Full scale (Mean X)
Results from this research	428	2,97	3,08	3,00
Menekşe (2016)	468	3,97	2,60	3,65
İnce-Aka et Yılmaz (2018)	80	3,92	3,87	4,01
Özcan (2019)	320	-	-	3,55



In previous studies, FFL trainee teachers were not included. The sample for Ince-Aka and Yılmaz (2018) included maths and science trainee teachers, while Eskici (2016) and Özcan (2019) used a broader sample, including primary trainee teachers, Turkish language or English as a Foreign Language (EFL) to mention a few of them. The fact that FFL trainee teachers are aware of the situation, that they have accepted it and that they have reflected on the various career opportunities available to them, results in a lower level of anxiety due to non-tenure compared to trainee teachers from other branches.

Academic motivation ( $X=3,65/5$ ) can be explained by their voluntary choice to study FFL at university and the satisfaction of their branch. Similarly to Gömleksiz and Serhatlioğlu (2013), amotivation is higher for male trainees compared to females. Regarding significant differences due to the socio-economical background of the trainee teachers (lower income groups showing higher levels of extrinsic motivation), those with a lower income may show higher levels of academic motivation if they wish to graduate as early as possible in order to find a job and start earning a living (Kaya & Varol, 2004). According to Viau (2009), the perception learners have of themselves and their environment determines their choice to get involved or not in their learning. Here, they seem to get involved in their learning process because they claim having voluntarily chosen this field of study, they are aware of the problems they will have to face after graduating and start reflecting on their career opportunities early in their university studies.

But FFL trainee teachers do suffer from future anxiety because obtaining a very high mark in the KPSS exam is not enough. No matter how much work and effort they put in for the KPSS exam or during their university studies, their tenure is still highly unlikely or even impossible. This situation leads to future anxiety due to the fear of not finding a job or not being able to earn a living as it is the case for most university graduates (Sadıkoğlu et al., 2018). Just like most trainee teachers in Turkey, the KPSS exam is another source of anxiety for FFL trainee teachers. The fear of failure and anxiety due to the preparation for the exam as well as the knowledge that they must obtain a really good score to pretend to a tenured post are all factors leading to being anxious (Baştürk, 2007; Karaçanta, 2009; Çetin, 2013).

Moreover, language anxiety is another source of anxiety as participants have claimed that their linguistic skills were inadequate. First, anxiety is felt as learners of a foreign language. Indeed, the fear of being judged, the fear of failure or of being in an unfamiliar situation (Bekleyen, 2008) or even the relationship learner-teacher (Aslım Yetiş, 2012) may affect trainee teachers. Then, anxiety is felt as a teacher of foreign language where trainee teachers will feel anxiety due to the perception of their linguistic skills, their lack of experience, the lack of interest from learners or difficulties linked with time management (Aydın & Ustuk, 2020).

If more tenured posts were offered to FFL trainee teachers each year, academic achievement at university and a higher level of skills (linguistic, pedagogical and communicative) would have more importance in their selection process. This would lead trainees to put more effort in achieving academic success, in turn decreasing their levels of language anxiety.

It is important to stress that trainee teachers are satisfied from their branch and appreciate the French language; therefore decreasing the number of places in FFL departments in Turkish universities should not be recommended. The Turkish Ministry of Education (MEB) seems to focus on the

development of ELT throughout the country with around 2000 tenured posts in 2021 and similar numbers in previous years. It is undeniable that English is the new Lingua Franca and should be taught in Turkish state schools but language diversity should also be considered. French is an official language in many countries in Europe, Africa or Canada and therefore should be considered as a second foreign language to be taught in schools on a broader scale as it can facilitate Turkey's commercial, political, cultural and scientific exchanges with many countries worldwide.

Moreover, the Common European Framework of Reference for Languages (CEFR) highly recommends teaching a diversity of foreign languages in order to promote plurilingualism:

The aim is to develop a linguistic repertory, in which all linguistic abilities have a place. This implies, of course, that the languages offered in educational institutions should be diversified and students given the opportunity to develop a plurilingual competence. (Council of Europe, 2001, p.5)

However, it would seem that the French language, just like other foreign languages other than English, is not widely available as a 2nd foreign language in Turkish state schools and this situation does not allow Turkish learners to "develop a plurilingual competence" as recommended by the CEFR. Developing plurilingualism in Turkey would create a need for a more diverse range of language teachers and increase the need for tenured posts for FFL teachers.

University academic staff can also be affected by the situation as they have to accept the idea that their students will not become teachers, the job they are being trained for. Just like trainee teachers, this can affect their academic motivation. Indeed, if intrinsically motivated, they may be affected by the lack of tenured posts offered to their students and share their future anxiety and fears for an uncertain future. According to Sogunro (2015), the quality of teaching at university has an effect on the students' motivation. Therefore, we could wonder whether the level of motivation from academic staff at universities will have an effect on the quality of the teaching they deliver. Motivation and quality of teaching delivered at university could, in turn, affect the level of anxiety and academic motivation of FFL trainee teachers.

Finally, the following topics could be researched in the future;

This research highlights that FFL trainee teachers do suffer from future anxiety and therefore it would be interesting to develop a broader scale that would include all the factors causing future anxiety among trainee teachers and not only non-tenure.

Comparing the results obtained for FFL trainee teachers with those from other branches and particularly with other Foreign Language Teaching departments in Turkish universities. Indeed, the number of tenured posts for teachers of English or German for instance are much higher than that of FFL teachers. A detailed study taking into account anxiety factors specific to language teachers and very different numbers of tenured posts would be of great interest.

We believe that future anxiety and non-tenure of FFL trainee teachers also have an effect on the motivation of academic staff at universities and that it should be further researched.

The reasons behind the choices made by the Turkish Ministry of Education (MEB) regarding the number of tenured posts

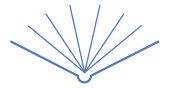


offered each year to trainee teachers and the policies in place for the dissemination of foreign languages in Turkish state schools should be examined and evaluated. Why more tenured posts for FFL trainee teachers are not offered each year, why not start learning a second foreign language earlier? That is why the needs, difficulties and advantages of the above mentioned topics should be examined on a broad scale including many stakeholders such as MEB, state schools in Turkey, teachers, learners or parents.

Plurilingualism in Turkish state schools and the dissemination of various foreign languages as promoted by the CEFRL is another topic that should be examined as it seems that it is not something that is sufficiently encouraged and promoted in Turkey. Plurilingualism would be an added value for graduate students, increasing their employability and, of course, having a positive effect on their levels of future anxiety.

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# Trends of Studies on Education in the Covid 19 Pandemic: A Descriptive Content Analysis

Nur ÜTKÜR GÜLLÜHAN<sup>a</sup>, Derya BEKİROĞLU<sup>b</sup>

## Abstract

This paper aims to examine the trends of studies on education in the course of the Covid 19 pandemic with a holistic approach. The sample of this study consists of 360 studies published in journals within the scope of SSCI, SCI-Expanded, ESCI, SCOPUS, and ERIC. The publication classification form was used in the analysis of the studies. In this research, the descriptive-content analysis, one of the qualitative research designs, was used. According to the results, the studies were published in the Education Sciences Journal and published in journals with SSCI and SSCI-exp index the most. The studies were mostly the subjects that involved the distance education process and remote learning. In addition, it is found that the most used research method was the qualitative method. Document review, interview, and survey were used as data collection tools. Also, the sample of the studies consisted of mostly undergraduate students, and the sample size was between 31-100. Descriptive analysis and content analysis were mostly used to analyse the data. It is revealed that t-test and non-parametric tests were mostly applied in the results obtained regarding the inferential statistics calculations. The following can be suggested on the result of the research; During the covid 19 pandemic, studies were mostly gathered under the umbrella of distance education. Studies have guided the education field on how the field can better use and develop the remote learning process in case of an epidemic or a global threat.

**Keywords:** Covid 19, Content Analysis, Distance Education, Holistic Approach, Remote Learning.

## Introduction

The novel Coronavirus (SARS-CoV-2), which emerged in the Hubei Province of the People's Republic of China, has spread very quickly to many countries around the World (Velevan & Meyer, 2020). Based on the increasing number of cases and death rates, on January 30, 2020, the WHO Emergency Committee declared a state of emergency in a global epidemic (WHO, 2020). Due to the very rapid transmission of the virus from person to person and the increase in the number of cases and death rates, quarantine decisions have been implemented in many countries on a global scale. All countries supported the "stay at home" calls and implemented the isolation process to minimise the contagiousness of the disease. With the quarantine decisions, social mobility has been reduced, and work, education, and social activities have been suspended. One of the areas most affected globally by the quarantine practices has been the education and training fields. According to UNESCO (2020) data, more than 188 countries have suspended face-to-face education during the pandemic. It has been determined that this rate corresponds to 91% of the world's student population in total.

The disease, which forced the whole world to change psychologically, socially, and economically, profoundly affected the education world. The countries' education systems faced a situation where they were unprepared. The education world has implemented distance education, which it has used as an option until now, as an alternative to face-to-face education. 1.6 billion students in 200 countries (Yang, 2020) worldwide had to adapt

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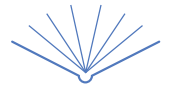
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to a new system from their traditional education system with the closing of schools during the Covid 19. In this process, it has occurred many problems such as teachers' lack of technological and pedagogical knowledge and experience, inequality in students' access to distance education, issues experienced by teachers and students during distance education, the psychological effects of the transition from face-to-face education to distance education, the capacity of countries to provide distance education services, the level of academic achievement in the process, the uncertainty about the future of the schools, and the anxiety caused by parents, students, and teachers. In this process, the states have worked on alternative digital teaching applications, training sets, and programs to enable the future of education and online applications to function smoothly.

There were international studies on the reflections of the difficulties, disruptions, deficiencies, and mandatory changes in education in the Covid 19 period (Alameny-Arrebola et al. 2020; Bai, 2021; Cavus et al. 2020; Darras et al. 2020; Dhanalakshmi et al. 2020; Grauman, 2020; Hadar, 2020; Kay et al. 2020; Kuhweld et al. 2020; Kidd & Murray, 2020; Iglesias Pradas et al. 2021; Sahlberg, 2020; Torrau, 2020; Wonk & Moorhouse, 2020). The need has arisen to examine all the studies that reveal the situations in the education process during the pandemic period. This study investigates education trends in the Covid-19 pandemic by making content analysis with a holistic perspective. We hope this research will be shown the trends in the Covid-19 education period and provide a perspective for future studies in the new education process. In addition, the results of this study due to sample saturation are thought to be important for the literature. This research examines the studies on the Covid-19 pandemic education in SSCI, SCI-Expanded, ESCI, SCOPUS, and ERIC indexed international journals in terms of various variables. For this purpose, the research questions are as follows;

- According to the published journals, what is the distribution of the studies on education during the Covid-19 pandemic?
- What is the index distribution of the journals in which the studies are published?
- Which topics were preferred in the studies on education during the Covid-19 pandemic?
- Which research methods were used in the studies on education during the Covid-19 pandemic?
- Which data collection tools were used in the studies on education during the Covid-19 pandemic?
- How were the sampling characteristics of the studies on education during the Covid-19 pandemic?
- Which data analysis methods were used in the studies on education during the Covid-19 pandemic?

### Theoretical Framework

Regarding the Covid-19 pandemic in various countries, academic studies on education have been carried out in the international arena. These studies aimed to reveal the pandemic's challenging and urgent situations. In this sense, examining these studies with a holistic approach is critical in determining the trends of this new process in education.

A holistic approach is based on the belief that the individual's social-emotional, psychological, ethical, and academic developments are interconnected. The primary goal is to meet the individual's needs considering all the development areas (Miller, 1992). It is an approach that delicately examines the relationship among individuals, society, and culture. It is possible to say that the basic principle of the holistic approach is integrity, a link between almost everything in the universe. Also, this approach is an educational journey for students to realise themselves and interact with others in the world. Many learning theories adopt a holistic approach in education. One of the most important is the Gestalt approach, called holistic theory. There have been many studies on the Gestalt approach. According to Wertheimer (1938), the individual perceives a behaviour as a whole, not by spreading it into its parts. The whole is more meaningful and different from its constituent parts. According to Koffka (1922), a human is not a mechanical being; therefore, it does not solely make sense to examine its details. Individuals are not just beings that react to the stimuli coming from their environment; rather, they are entities that interact with their circumstances and create a reaction as a result.

According to the Gestalt approach, each individual is special and has a phenomenological perception. Moreover, learning refers to how individuals understand and make sense of the physical and psychological environment (Arnheim, 1961).

As stated by holistic theorists, two environments are important, the physical environment (physical and objective reality) and the psychological environment (psychological or subjective reality). As stated by them, the behavioural environment (subjective reality) determines behaviour. In addition to Pragnanz law, individuals' needs, values, beliefs, and attitudes also contribute to the physical environment's meaning and organisation of sensory stimuli. Therefore, the interpretation of the environment is important, as people's reactions in the same physical environment may be different. Individuals are not separate from the problems around their physical environment; the psychological environments' effects have more impact than the physical environment on the individuals' behaviour (Humphrey, 1924).

The belief that the psychological environment that is, the behavioural reality, is more influential than the physical environment as a determinant of behaviour might be translated into the students and their teaching-learning process as follows: students' beliefs, values, needs, attitudes have an important effect on making sense of physical stimuli in the teaching-learning environment. In other words, the effects of external conditions depend on the student's internal states. Therefore, the mission of teachers is to create a learning context in line with the needs and wishes of the students. In addition, throughout this process, a learning environment should be arranged in which students can develop a positive attitude towards learning and coincide with their values.

The holistic theory focused primarily on the perception and problem-solving processes. Their views on learning and their work on perception are similar. According to them, perception is an organisation. The Gestalt gathered the auxiliary laws of the organisation into a more general common law. This law, called Pragnanz, believes that every psychological phenomenon tends to be meaningful, simple, and complete. Individuals try to make sense of the stimuli coming from their environment and reach a balance. Therefore, they perceive similar stimuli, arrange stimuli close to each other, and complete the missing stimuli, thus trying to reach the balance (Aydın, 2007; Ellis, 2013; Latner, 2011).



One of the most important reflections of Holistic Theory on education is the practices of insightful problem solving and productive thinking. In order to have insightful problem-solving behaviour, students must be evaluated with all aspects of the problem. Put another way; students should have the necessary items for the problem and its solution. In addition, students need a long preliminary solution process to solve the problems intuitively. Consequently, teachers should give students sufficient time so they can explore new information about the problem, rearrange and develop the problem, and cognitively try out possible solutions. Through the teacher's repetition, students will be more successful in solving a problem, permanent learning will be ensured, and the learning-teaching process will become more meaningful. Plus, for students to transfer what they have learned to other situations, teachers should bring real situation problems to the classroom environment and allow students to come up with solutions to these real problems (Aydin, 2007).

According to Gestalt theorists, since individuals interact with society, they could develop anxiety and stress when their needs are not met. Thus, dissonance appears regarding behaviours and learning (Weisberg & Alba, 1982). The pandemic is the most recent example of this situation. During the pandemic, there were some changes, innovations, and challenges regarding the cognitive, social, and psychological aspects of students' learning processes. According to United Nations Educational, Scientific and Cultural Organization UNESCO (2020), nearly 1 million students from more than 100 countries worldwide have been affected socially, economically, psychologically, and academically during the pandemic.

The first one of these effects is "deficiencies in learning" undoubtedly. For students, schools are fundamental learning places. Besides schools' physical aspect, they are essential learning organisations. As students were away from schools as physical learning contexts during the pandemic, it negatively affected them physically, socially and academically. The second effect is "social isolation". For the first time, students experienced such a deep experience with the concept of "social isolation" during the pandemic. Schools are places for students to "socialise". Students were deprived of their socialisation processes, could not interact with their peers, and their communication was also negatively affected. The third major impact is that the "online learning" system has been a compulsory part of basic education. Even though this brought innovation in education, it also brought inequality and deprivation of education for students who do not have internet access. The other effect is the difficulty and pressure experienced by the schools that continue their educational activities. Another uneasiness and fear experienced by families are "the deficiencies experienced by students in terms of academic and health". As can be seen, the education process has been exposed to many external effects during the pandemic.

## Method

### Research Design

Since the main purpose of this research is to determine the trends of studies related to education during the Covid-19 pandemic, the research was carried out with descriptive content analysis, which is one of the most suitable qualitative research models for this purpose study. Descriptive content analysis is a systematic study that includes all published or unpublished studies within a specific subject and evaluates their trends and research results in a descriptive dimension (Lin, Lin & Tsai, 2014). It is the examination of all qualitative and quantitative studies, published or unpublished, carried

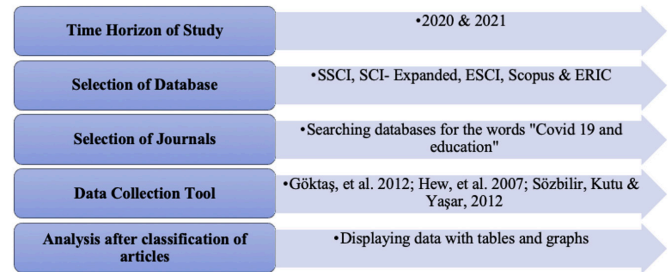
out independently of each other within a determined subject, and determining the general trends in the field. Descriptive content analysis shows the general trend of researchers who work or want to work in the relevant field and subject and guides future studies (Miles & Huberman, 1994).  
Study Group

The research population consists of open and full access articles about education during the Covid 19 process, scanned in international indexes. The sample of the study consists of 360 full-access articles published in 202 different journals within the scope of "SSCI, SCI-Expanded, ESCI, Scopus and ERIC between the years of 2020 and 2021. In the sample selection of the article to be included in the research, the criteria for "full access and the words Covid 19 and education" in the title of the article were determined. A total of 400 articles were reached during the study. However, full access to 40 articles could not be achieved. The summary sections of these articles were read, but these articles were not included in the study due to the lack of information suitable for the sub-purposes of the study. In this context, purposive sampling was used in the research sample selection. The 360 articles included in the study by carefully scanning the journal issues and volumes are presented in Appendix 1.

### Data Collection Tools

In this study, data were collected by document review. The data collection process was planned within the scope of the criteria determined in the study. The steps followed for this process are given in Figure 1.

Figure 1. Data Collection Process



According to Figure 1, it is seen that the studies were conducted between the years 2020 and 2021 as an emerging time of Covid 19. Then, it was determined in which database to search; international databases "SSCI, SCI-Expanded, ESCI, Scopus and ERIC" were searched. In line with the studies made with the determined keywords, the articles in the journals were listed and analysed with the Publication Classification Form. The Publication Classification Form, which was used as a data collection tool in the study, was created and inspired by similar studies in the literature (Göktaş et al. 2012; Hew et al. 2007; Sözbilir, Kutu & Yaşar, 2012). The classifications made are presented in tables and graphs together with the frequencies.

### Data Analysis

A total of 360 articles within the scope of this study, according to the categories (name and author of the study, the journal in which the study was published, the index of the journal, the subject of the study, the research method of the study, the sample of the study, the data collection tool of the study, the data analysis of the study) in the "Publication classification form" analysed. The data obtained as a result of the examination of each article were transferred to an Excel file. In the data obtained in this study, frequencies



and percentages were calculated, and descriptive analysis was used. Regarding the data recorded in the created Excel database, the frequencies and the percentages related to these frequencies were calculated to correspond to the answer to each research question.

**Validity and Reliability**

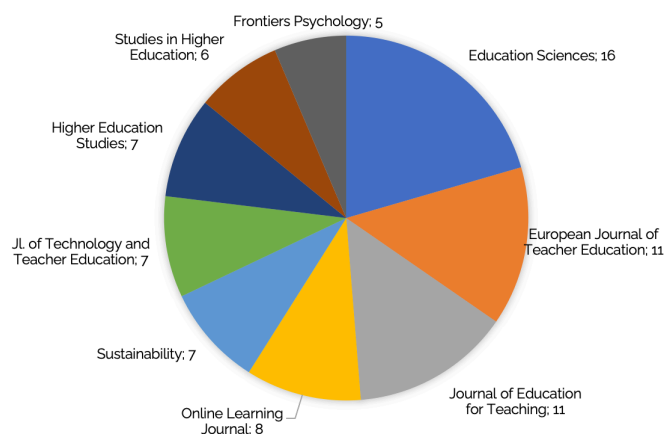
Taking the necessary precautions for validity and reliability requires the correct steps of the study and the accuracy of the research results. In this context, all stages of the process followed in data collection and analysis for internal validity are explained in detail. To ensure the reliability of the research, the articles examined within the scope of the study were shared by the researchers. In the first stage, each researcher entered the data of the articles they examined in the form published on the web. In the second stage, the accuracy of the data entered was checked by another researcher by re-examining the articles. The final decision was made by discussing the differences of opinion that emerged during these controls. For reliability, (Reliability = Agreement / (Agreement + Disagreement) x 100) was used to calculate the percentage of agreement between encoders; the percentage of agreement was calculated as 0.94 (Miles & Huberman, 1994).

**Results**

**Distribution of the Studies According to the Published Journals**

According to the content analysis, the names and numbers of the journals in which the studies are published are mentioned in Figure 2.

**Figure 2. Distribution of the Studies According to the Published Journals**

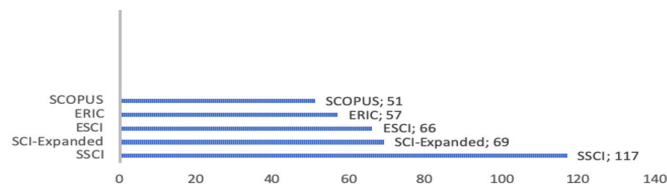


This study included 360 studies were published in a total of 202 journals. As seen in Figure 2, the studies are mostly published in the Education Sciences journal (f=16), followed by the European Journal of Teacher Education and Journal of Education for Teaching with 11 articles, in the Online Learning Journal with 8 articles, in Sustainability, Higher Education Studies, JI with 7 articles respectively. There are 6 articles in the Journal of Studies in Higher Education and 5 articles in the journal Frontiers Psychology. In addition, there are journals with one or two articles not included in the figure (Appendix 1).

**Index Distribution of the Published Journals in the Studies**

According to the content analysis, the indexes of the journals in studies are published given in Figure 3.

**Figure 3. Distribution of the Journals Index**

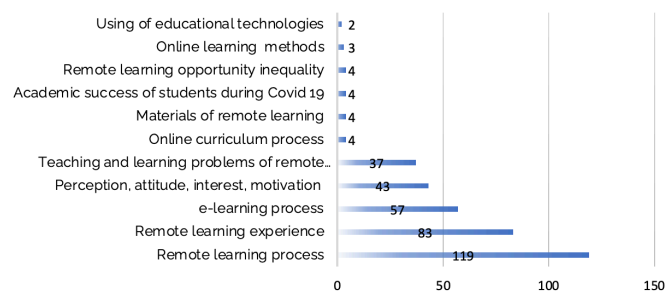


According to Figure 3, the SSCI index (f=117) comes first in the indexes of the published journals. This is followed by 69 SCI-Expanded, 66 ESCI, 57 ERIC, and 51 Scopus indexed journals, respectively.

**Distribution of Preferred Topics in Studies**

According to the content analysis, the preferred topics in the articles are given in Figure 4.

**Figure 4. Distribution of the Research Topics**

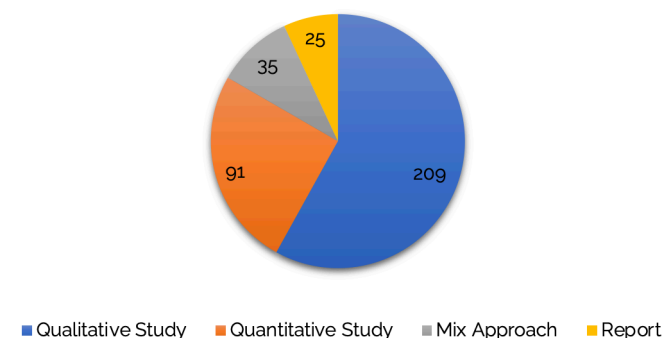


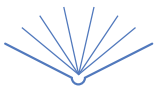
According to Figure 4, when the distribution of the studies examined in the research is analysed, it is seen that the greatest number of studies involving remote learning process (f = 119) in the Covid 19 period. There are 83 studies describing remote learning experience; 57 studies including the e-learning process; The number of studies evaluating the interests, attitudes, perceptions, and motivations of students and teachers is 43; 37 studies including e-learning and problems experienced in the education process; Online curriculum applications, materials of remote learning, studies that evaluate student academic success, and talk about the inequality of opportunity in online education 4; 3 studies on online learning methods; 2 studies using of educational technologies, online learning measurement, and evaluation, the physical and mental health of students during Covid 19.

**Distribution of Research Methods in Studies**

When the research methods in the articles are examined, a table like Figure 5 is faced.

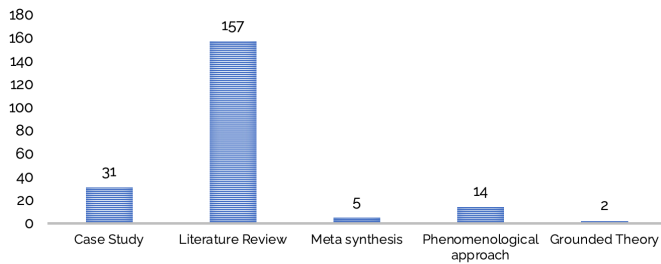
**Figure 5. Distribution of the Research Topics**





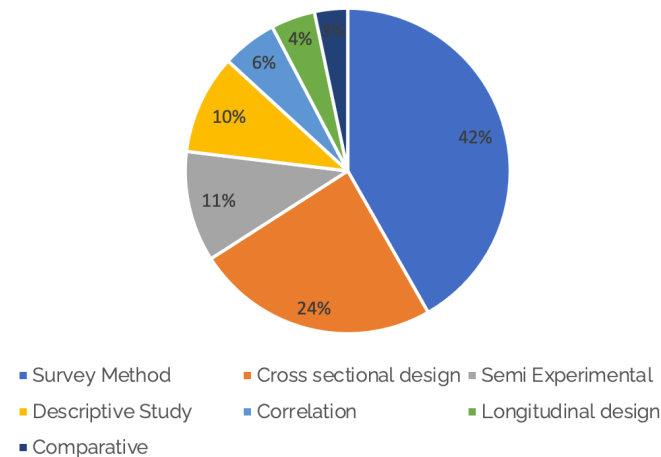
According to Figure 5, 209 (58.06%) of a total of 360 studies within the scope of the research are studies prepared with the qualitative method. 91 of the studies (25.28%) are quantitative studies; 35 of them (9.72%) are conducted with mixed methods. In addition, 25 (6.94%) studies are prepared in the form of reports on education status during the Covid 19 process. Research designs used in all research methods are given in Figures 6-8.

**Figure 6.** Distribution of the Qualitative Method Designs



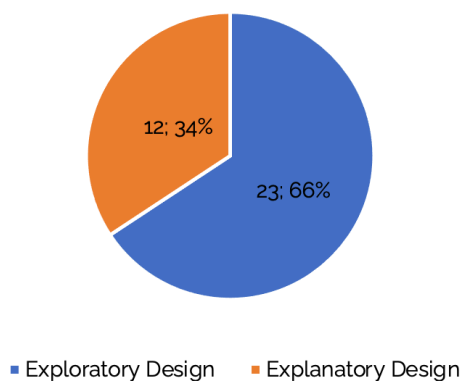
According to Figure 6, it seems that 157 of the 209 qualitative studies within the scope of the research are literature review; 31 of them are in case study design; 14 phenomenological models; 5 of them are meta-synthesis; 2 studies are grounded theory.

**Figure 7.** Distribution of the Quantitative Method Designs



According to Figure 7, 38 (42%) of the 91 quantitative studies are survey method, 22 (24%) are cross-sectional studies; 10 studies (11%) are in semi-experimental method; 9 (10%) studies are descriptive; 5 studies (6%) are correlational, 4 (4%) studies are longitudinal, and 3 (3%) studies are in comparison design.

**Figure 8.** Distribution of the Mix Method Designs



According to Figure 8, it is seen that out of 35 mixed methods in the exploratory research design of 23 (66%), 12 of them (34%) are in explanatory design.

**Distribution of Data Collection Tools in the Studies**

The data on the data collection tools in the studies are given in Table 1-3.

**Table 1.** Distribution of Data Collection Tools in Qualitative Research

Data Collection Tool	Types	Number of articles (f)
Document review	-	130
Interview	Structured	30
	Semi-structured	26
Survey	Open ended	14
	Non-participant	8
Observation	Participant	2

As seen in Table 1, the most used data collection tool in qualitative studies is document analysis (f = 130). It is followed by 56 interviews, 14 open-ended surveys, and 10 observations. In addition, more than one data collection tool is used in one study.

**Table 2.** Distribution of Data Collection Tools in Quantitative Research

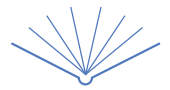
Data collection tools	Types	Number of articles (f)
Survey	Likert	53
	Mix	9
Alternative tools (rubric,	Open ended	16
Interest-Attitude-Perception tests	Open ended	11
Achievement test	Multiple choice	4

According to Table 2, the most preferred data collection tool in studies using quantitative methods is the questionnaire (f = 64). Out of 59 surveys, 53 are Likert type, and 9 are mixed form. After the survey, the most preferred data collection tool is alternative tools.

**Table 3.** Distribution of Data Collection Tools in Mix Method Research

Data collection tool	Types	Number of articles (f)
Survey	Likert	15
	Mix	12
	Open ended	2
Interest-Attitude-Perception Tests	Open ended	9
Focus group discussion	Semi-structured	6
Interview	Semi-structured	5
Achievement test	Open ended	4

According to Table 3, the most preferred data collection tool in mixed studies within the scope of the research is the questionnaire. A total of 29 questionnaires, 25 are in Likert type, 2 are open-ended, and 12 are mixed. After the survey, the preferred data collection tools are interest, attitude,



perception tests 9, focus group discussion 6, interviews 5, achievement tests 4 open-ended forms.

#### Distribution of Sample Characteristics of the Studies

**Table 4.** Frequency of Sample Levels

Sample Level	f	%
Undergraduate students	46	29,87%
Teachers	38	24,68%
Parents	21	14,29%
Academics	16	10,39%
Primary school students	10	7,79%
Middle school students	12	6,49%
School administrators	8	5,19%
Preschool students	2	1,30%
Total	154	100

According to Table 4, the most preferred sample level in studies is undergraduate students, with a ratio of 29,87%. Teachers followed it with 24,68%, respectively; 14,29% parents, 10,39% academicians, 7,79% primary school students, 6,49% middle school students, 5,19% school administrators, 1,30% pre-school.

**Table 5.** Distribution of Sample Size

Sample size	Qualitative Research	Quantitative Research	Mix Research
Between 1-10	14	-	-
Between 11-30	22	3	3
Between 31-100	15	37	6
Between 101-300	9	13	16
Between 301-1000	2	18	6
More than 1000	-	19	4
Total	62	72	35
More than 1000	-	19	4
Total	62	72	35

According to Table 5, it is seen that the sample range between 11-30 in qualitative studies was highest in number. 15 studies were followed by between 31-100, 14 studies between 1-10, 9 studies between 101-300, and 2 studies between 301-1000. In quantitative studies, the highest sample range in number was found to be the sample size between 31-100. 19 studies were followed by more than 1000 sample size, 14 studies between 301 and 1000, 13 studies between 101-300, and 3 studies between 11-30, respectively. In mixed studies, the sample size was between 101-300. 16 studies were followed by between 31-100, 6 studies between 301-1000, 4 studies in the range of more than 1000, and 3 studies between 11-30, respectively.

#### Distribution of Data Analysis Methods in the Studies

The distribution of data analysis methods used in the articles is examined as qualitative and quantitative methods, and the data obtained are given in Tables 6 and 7.

**Table 6.** Qualitative Data Analysis Distribution

Sample Level	Analysis types	f
Qualitative Data Analysis	Content Analysis	52
	Thematic Analysis	40
	Descriptive Analysis	16
Total		108

According to Table 6, it is seen that content analysis is the most preferred among qualitative data analysis, followed by thematic analysis and descriptive analysis, correspondingly.

**Table 7.** Quantitative Data Analysis Distribution

Quantitative Data Analysis			
Descriptive	Inferential		f
	f	f	
Frequency/ Percentage/ Chart	81	t- test	49
Median and standard deviation	51	Nonparametric tests	35
Graph Representation	25	Regression	28
		Correlational	21
		ANOVA/ANCOVA	17
		Factor Analysis	7
		Other	4
Total	157		161

As seen in Table 7, the frequency/percentage/chart is used the most, 81 times, in the descriptive statistics calculations in quantitative data analysis. And it is followed by the mean/standard deviation as 51 times and the graphic representation as 25 times. It is seen that t-tests are used 49 times, non-parametric tests 35 times, regression 28 times, correlational analysis 21 times, ANOVA 17 times, factor analysis 7 times, and other analyses are 4 times in inferential statistics calculation.

#### Discussion, Conclusion and Suggestions

In this study, which aims to examine the international articles about education in the Covid-19 pandemic according to various variables, 360 studies were analyzed by content analysis. According to the first findings of the research, the studies related to the Covid 19 process in the international area were mostly published in Education Sciences, Journal of Education for Teaching, Online Learning Journal, and Sustainability. Yavuz, Kayalı and Tural (2021) concluded that the articles were mostly published in the Sustainability journal in their study. Education Sciences, which ranked first in this study, ranked third in the related study. These different results in the studies may be related to the different number of articles examined in both studies.

According to the second sub-objective results of the analysis of the studies on education on the course of the Covid-19 pandemic, the journals within the scope of SSCI are in the first place in the ranking of the articles in accordance with the indexes of the published journals. SCI-Exp and ESCI index followed it. In the third sub-objective of the research, the remote learning process took first place regarding the distribution of the preferred topics in the studies. Aristovrik et al. (2020), Kay et al. (2020), Yaman (2021) had similar findings in their studies. Aristovrik et al. (2020) surveyed 30,383 students in 62 countries to evaluate the Covid-19 pandemic and



found that students had the most difficulty in adapting to the remote learning process; while Kay et al. (2020) found that the disruptions in the online learning process of the students affected the efficiency of the practical training; in a study by Yaman (2021), in which online learning processes were compared, it was stated that the online learning process should be able to continue without reducing the efficiency of students and teachers.

According to the results obtained in the fourth sub-objective of the research, the most widely used research method was the qualitative research method, followed by quantitative and mixed studies, and the least preferred was reports. This finding supports the study has been reported by Daşdemir & Cengiz (2020), Homolak et al. (2020) and the study of Yavuz, Kayalı and Tural (2021), however, contradicts the study of Maulana (2020), in which it was found that the number of quantitative studies was more than the number of qualitative studies. This difference in studies may be due to the large number of qualitative studies related to distance education at the beginning of the pandemic.

According to the findings of the fifth sub-objective of the present study, the most used data collection tool among the qualitative studies was the document review, followed by the interview, survey, and observation. In quantitative studies, the survey was the first, then alternative tools, interest, attitude, perception tests and achievement tests followed. In mixed studies, the survey took the first place, and it was followed by interest, attitude, perception tests, group interviews, interview and achievement tests. In general, document review, interview, and survey data collection were preferred the most in the studies. In the study of Maulana (2020), document analysis as a data collection tool was the most preferred one in qualitative studies; Yavuz, Kayalı, and Tural (2021) concluded in their studies that survey was the most used data collection tool in quantitative studies. These findings are similar to the results of the present research. In addition, the presence of mobile data and alternative data collection tools in data collection tools may also indicate that new mobile application studies have been developed during the Covid-19. If we interpret it in general, we can say that data collection tools were chosen accordingly since studies that could produce short-term solutions to the problem were carried out based on a limited understanding of time and space during the Covid-19 pandemic. This result of the research is compatible with the studies in the literature (Dikmen & Demirel, 2016; Türkoğlu & Öner, 2020; Sarıkış & Bilican-Demir, 2020).

According to the sub-objective results, the sample characteristics of the study was observed; undergraduate students appeared first in the sample levels. It is followed by parents, academicians, primary school students, secondary school students, and pre-school students. The reason why undergraduate students are in the first place in the sample levels may be the difficulties, disruptions, and future status of the process experienced by the university department that requires practical education; and the students who must practice during the Covid-19 pandemic. Iyer et al. (2020); Gamage et al. (2020); Yu & Jee (2021); Maulana (2020); the studies by Yavuz, Kayalı and Tural (2021) supported this finding. The sample sizes were mostly 11-30 in qualitative studies, 31-100 in quantitative studies, more than 1000 was the second and 101-300 in mixed studies.

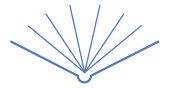
The content analysis took first place among the qualitative analysis methods used in the research. It was followed by thematic analysis and descriptive analysis. In quantitative data analysis methods, frequency/percentage calculation is the most preferred; mean and standard deviation descriptive

statistics calculations took second place. The third, t-test, was followed by non-parametric tests, regression, correlational, Anova, factor analysis, and other predictive statistical analyses.

However, these findings are similar to the study results by Doğan and Tok (2018), in which content analysis took the first place in qualitative data analysis. In the study by Göktaş et al. (2012), frequency and percentage calculation analyzes were mostly used in quantitative method studies.

The limitation of this research is the results of a total of 360 studies published in the SSCI, SCI-Expanded, ESCI, SCOPUS, and ERIC databases. If we look at it from this perspective, the following general findings can be pointed out about the research results. The world of education, such as the fields of economy, politics and health, was caught unprepared for the pandemic. Distance education, which has been an alternative teaching method for education until this time, has been used as a compulsory teaching method all over the world during the pandemic. It is also usual for qualitative research and document analysis techniques to come to the fore in studies. Because in these studies, information has been transferred to provide education stakeholders with the information on the pandemic to make the distance education process better serve students.

The most frequently preferred subject in studies is the distance education process has also created the idea that this change can be a part of the education world. Based on the distribution of the subjects in the studies, it is seen that apart from the online learning practices in the Covid-19, this new situation is carried out in studies that evaluate academically, psychologically and physically. If we evaluate this situation within the framework of holistic theory, the pandemic, which is a global and external factor, has negatively affected education and training practices. As a matter of fact, Onyema et al. (2020) claimed that as a result of their study, the Covid-19 had devastating effects, and the studies focused on student, school and infrastructure problems of the online learning system. It can be said that the studies mostly focus on the academic and learning-teacher process, while the number of studies emphasizing the psychological aspects of students in the pandemic was less. This finding aligned with the systematic study by Cachon- Zagalaz et al. (2020), where the number of studies examining the effects of the Covid-19 on students' psychological and motor skills is low. We can say that the state of chaos has increased the number of studies on the distance education method. In parallel, we can say that the most used data collection tools in studies are interviews and surveys, and this new process is preferred to reveal the current situation. As it is known, survey studies are studies that reveal the current situation and do not go deep into the problem. It is an expected result that the sample group includes students at the undergraduate level because the practical training of many undergraduate students (health and education degree) was interrupted during the Covid-19. At this point, it can be said that there are many studies in which the ideas and opinions of undergraduate students, including how the distance education process is reflected in practical education. Of course, we see the difficulties and shortcomings of the Covid-19 in primary, secondary and pre-school education levels. However, within the limitations of this study, it concluded that the studies were conducted mostly for undergraduate students. Also, it can be said that the sample numbers are in the range of 31-100, which is at a reasonable level during the Covid-19. In general, the results of this study show that online learning and the distance education process are shaped within the framework of integrating education. This study examined studies on education during the Covid 19 period from a



holistic perspective. It is clear that the Covid 19 process has started a new era in education.

- In the new education process where distance education and digital platforms are integrated into education, there is a need for new studies on the future of online learning, how it will provide a more qualified education process to students, teachers' techno-pedagogical knowledge and skills, and students' online learning adaptation process.
- In future studies, necessary measures should be taken so that education and training can progress in a hybrid structure with students and other stakeholders such as teachers, parents and administrators in schools.
- It is unknown how the next process will be, whether a new virus will cover the world, and what will change the education system. It is necessary to be prepared for all kinds of problems.

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# Perceptions of Parents and Students towards Homework in Mathematics

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## Abstract

Homework has become of great interest to educators and seems to lead to tension between parents and students. This study investigates parents and students' perceptions and involvement in homework. The main research question is, "what are the parents and students' perceptions towards homework in mathematics? Moreover, the way parents follow their children's homework and the difficulties they face and how they overcome these difficulties. Another objective focuses on identifying the relationships between parents, students, and teachers and to what degree they got influenced by the Ministry of Education that canceled homework in Israel. This study is a qualitative one based on interviewing 12 parents and 12 students from elementary schools in the Arab sector in Northern Israel. The interviews collected data concerning the participants' perceptions towards homework. The findings of the study show that most parents and students identify the goals and importance of homework. However, among the barriers that limit the students in doing homework is the Parental pressure and Math anxiety. Homework influences the interaction of the triangle of parent-student-teacher relationships. The research suggests the parents and students' solutions to promote the students in three levels: educational, interpersonal, social and educational spheres and the student learning Pattern. This study raises several dilemmas between the existing and desired according to students and parents' opinions.

**Keywords:** Homework in Mathematics, Involvement, Parents, Perceptions, Primary School

## Introduction

Doing homework has been a controversial topic for many years. Surveys point to the limitations, deficiencies, and dangers of giving homework, while teachers require doing homework as an integral part of learning (Hong et al., 2015). Due to this controversy and lack of research in the Arab sector, the topic of the study was chosen, namely to examine the students and parents' perceptions and involvement towards homework. Surprisingly, in countries like Finland and Singapore, kids spend less time doing homework with an average of 1-2 hours a week. However, those countries excel in the PISA tests. The authors explain that those countries provide support systems that can reduce the amount of homework and still bring students towards success.

The Ministry of Education and Culture in Israel requires the provision of homework and it lists two main objectives: (1) Reinforcing the teaching materials; (2) Preparing for future studies; (Algani, 2019).

### Parents' Involvement

Parental involvement that occurs in the education system is a social process that has recently been gaining momentum both worldwide and in Israel. The Israeli education system has been through several changes, starting from the notion that school is a bureaucratic institution subjected to the central government instructions (RAMA, 2017), moving to the lack of parental involvement in school as a "disadvantaged environment". The change that occurred in the 1970s was focused on granting more

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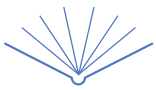
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autonomy to schools and establishing unique schools. What is the concept of 'parental involvement in school'? Many people discuss 'parental involvement' in the Israeli education system, yet the concept is not sufficiently defined.

### *Parents' Involvement in School*

The parents' two most prominent educational activities are the 'home' and the 'educational setting', which are interrelated - the parents who help their children at home tend to be the active parents in the school, as well (Greenbaum and Fried, 2011).

Home-school relationships are affected by the changes in the family, the accelerated technological changes in the recent decades, and the impact of the various media - telephone, cellular, television, the computer and the internet - that have changed the access to knowledge, information, learning, and so on. The economic situation in general and the labor market situation in particular also affect the relationships among the family members. The political and security situation, as well as the level of personal safety the students feel at school, have an effect on the relationship between parents and school. The relationship between parents and school is affected by all the social, economic, technological and security changes taking place outside of school.

There are two main mechanisms by which parents' involvement in school promotes achievement. The first is through the parental social capital. Social control is the second mechanism. It occurs when parents and schools work together to build a consensus on what is expected of students. Parents and teachers get to know each other and agree on goals, both behavioral and academic, which is considered a sort of social "compass" for the children that reduce behavioral problems. Through social control, children receive messages about the importance of learning, and these messages improve children's ability, motivation, and behavior in schools.

### *The objectives of homework*

According to the parents' perceptions, homework in mathematics can be used for different purposes as part of the educational process, where more than one objective can be found in each case. Training that is made possible through homework provides a foundation for deepening knowledge, mastering learning skills, application of concepts learned in class, preparing for a future class, expanding the learning environment and methods beyond the classroom and exposing students to diverse sources of knowledge (Trautwein & Lüdtke, 2009). Educational goals, which are developing the student's personal responsibility for learning, developing an independent learner and skills of independent learning; decision-making and problem-solving skills, will accompany the students later in their studies. Organizational goals: fulfilling an administrative guideline. Community goals: passing information to parents concerning the curriculum of their children (Trautwein & Lüdtke, 2009).

### *Skills needed for doing homework*

In order to do homework in mathematics, students must acquire some basic skills. Acquiring effective learning strategies early can be seen as a preventive intervention for the negative consequences that homework may have. It may prevent cases of dependency on the parents; parents do their children's homework. Developing an ability of

organization and preparing a work environment can motivate students to do their homework. Preparing homework can be done anywhere around the house which allows the student to work conveniently and the parents to provide assistance when needed.

Students should also be taught how to plan their homework schedule based on external constraints such as their other activities and their families' (Goodwin, 2017).

### *Pros vs. Cons*

Homework in mathematics, according to the parents, is a tool in the educational-academic process. The way of using it can promote education and the students' learning, or alternatively, damage their development and education (Gecer A. & Dag, 2012). Homework improves the students' learning habits. They can improve the students' perceptions toward school, and they can learn at any time (Kathleen & Snead, 2017)

Some of the conflicts that exist in the family between parents and children are related to doing homework. Homework can interfere with the routine of the family life and its culture of leisure. It can be used as a "carrier" by passing "school problems" onto family problems (Goodwin, 2017). Another concern is the acquisition of negative habits in addition to the positive skills that children sometimes acquire from doing homework. Children who fail to meet the requirements learn to lie to parents and teachers. Some often copy some or all their homework from their friends. On top of all of this, the ongoing accumulation of negative effects created by homework can generate negative attitudes toward school and students (Abd Algani, 2018; Abd Algani, 2021; Hong, Mason, Peng, & Lee, 2015; Paul, 2011; Núñez et al., 2015). Homework is perceived as an integral part of the school experience. At the same time, there are conflicts around this issue between teachers and students, between parents and their children and between teachers and parents. In general, there is no consensus among scholars regarding homework efficiency, in regard to improving the students' achievement.

### *The Purpose of The Study*

One of the key goals of the educational system for students is to develop independent learners who are able to guide themselves. Doing homework in mathematics independently is a skill that students need throughout their school years. In addition, the research examines the difficulties as well as the barriers encountered by parents and students in crystallizing the personality of the independent learner.

### *Research Questions*

From all the above, the researcher addresses the following questions:

- [1] What are parents and students' perceptions in elementary school towards homework in mathematics?
- [2] What are the difficulties that hinder homework in mathematics and how do they deal with them?
- [3] How does homework in mathematics affect the student-teacher relationship?
- [4] In what ways do parents' involvements in homework in mathematics manifest themselves?



**Method**

*Research Design*

The researcher uses the qualitative research to examine how parents and students perceive homework in mathematics and provide information that was previously unavailable as a parameter for improving the effectiveness of homework.

The collection of research data was done through semi-structured interviews conducted with each of the participants alone in a study room in the school. Each interview extended from half an hour to fifty minutes. The appointed time of the interview was fixed in advance, and at the beginning of the meeting, each pupil\ parent received brief information about the subject of the interview and was asked to agree to its recording, with the explanation that the research was anonymous and confidential. Agreement was given verbally by the pupils, parents and teachers.

*Participants*

The research included 24 participants (12 parents and 12 students); the students study in elementary schools in the Arab sector in Northern Israel. The students all study in the fourth grade; both boys and girls are defined as good students by their teachers and all of their grades above 90 in 4th grade. The parents are 6 academic parents with a B.A. degree, and 6 parents with a high-school diploma and their mean age is 35 (range between 30 – 40). All work till 4 clock in the afternoon. The socioeconomic ranking of Arab communities is located in the lowest clusters (Manna, 2008). The population of students is of low middle socioeconomic status.

*Data Analysis*

During the qualitative level of the study, a content analysis of the qualitative information was performed. The content analysis was based on locating repetitive meaning units in the collected initial information. Then, names and definitions for the content units that incorporate them were given, i.e., the categories. The categories were defined at the discretion of the researcher and according to the research questions. They were updated and further during the work. The information is categorized using flexible analysis units, including chunks.

The phrases included a sentence or several linked sentences that create independent content units that express the beginning and end of each interview. During the initial analysis, a long list of codes was created, some of which originated from the research literature on parental involvement and intervention in the school and some from the interviews themselves (see Fredman, 2005, pp. 255-268). This list grew sharper with each additional interview. Going forward, the codes are inductively grouped into categories that express common elements to the codes contained therein. This phase corresponds to the stage known as "coding axial" (see Fredman, 2005, pp. 255-268). The categorization of codes was performed by giving meaning to the data. The analysis was conducted on each interview; however, the study as a whole was based on many interviews. There was a deposit to be exposed to many data not just in order to many interviews and expressions of parents and students. We ensure an exposure to a lot of data in advance, not just the interviews but also many varied expressions of parents and students.

The initial fixed categories were confirmed or refuted; the categories were refined or rephrased. Additional categories

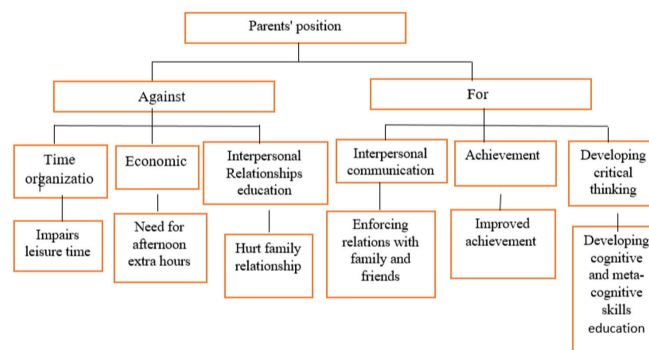
were found. The goal was to increase the validity in the later categories that were found to be related to one another. The ideas were grouped "under one roof" so that they became inclusive categories and were called "families." (see Fredman, 2005, pp. 255-268).

**Results**

The research findings are based on the analysis of the interviews. This section will show the findings based on parents' and students' statements as well as quotes that support these findings. perceptions of parents towards homework

The findings of the present study suggest that parents see homework in mathematics an important tool in assessing students and increasing school effectiveness. Despite this perception, parents argued that much homework and over-parental involvement hurt students, their evaluation and the student's level of responsibility. Interviewees noted, for example, that "homework contributes to an immediate increase in the academic achievement and understanding as well as controlling the material, yet it harms the leisure time due to the amount of homework. Homework helps in developing critical thinking and basic conceptualization. It helps students to communicate" (see Figure 1).

**Figure 1.** Parents' perceptions towards homework

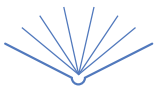


*Impact of Homework on Parent-Student-Teacher Relationships*

According to parents and students' interviews, homework in mathematics is a tool that influences the interaction between teachers, students and parents. Students report that if they do homework on time and in good quality, they get a compliment from the teachers and reinforcements from the parents. It gives them emotional and mental support that may strengthen their self-image. Selina reports that homework in mathematics strengthens the social ties in the family. "We sometimes work together; help one another so that homework becomes a positive experience at home". However some parents report a sort of harm to the relationships that manifest in acquiring negative habits. Students lie to avoid doing homework. In addition, parents report that it is very difficult to deal with homework because most parents are unaware of the study material, so they do not have the ability to help their children. Consequently, students come to class without doing homework.

*The Characteristics of Homework*

Parents and students emphasized the characteristics of good homework in mathematics while providing characteristics as challenging, as expressed by one parent: "A good homework is a challenging task that makes the students curious and close to their own world". A student said: "good homework should be interesting and challenging". He emphasized:



"homework should not be punishment or a completion of the material the teacher failed to complete during the lessons".

Most of the interviewees emphasized a very important characteristic which is: homework should be short and effective so that it would not be difficult. A point that was stated by one of the mothers: "good homework should be reflective and short". Another feature that emerged from parents' and students' responses is that good homework uses media, as an issue that is supported by one parent's statement: "we need a sort of homework that motivates the students to use the media and the student benefits from it". One of the students supported this feature: "good homework should be done in a group because it allows us to use more technological tools." Parents and students raised another feature which is addressing the student's level of difficulty: "good homework is the one that produces diversity in assignments and guides students to solve the assignments in a creative way" said one of the students. A parent supports the same characteristic by saying: "good homework serves a clear purpose, appropriate to the level of each student and to the subjects being taught in class at the same time".

According to the Ministry of Education, homework goals are directed towards practicing and developing of practicing skills. Doing homework strengthens the basis for deepening knowledge, mastery of learning, extending and applying skills learned in the class. These ideas got support by the student's words: "Practicing the material taught in class leads to deepening of knowledge and controlling the learning skills."

Another goal for homework is a social one. According to one student, "Sometimes homework is supposed to be done in groups, so it encourages social development and interpersonal relationships". Parents support this by saying that "giving homework in groups and getting students to meet outside the school strengthen the bonds among the students and creates a new social connection". On the other hand, some parents and students think that homework is a sort of punishment for the students. Homework socially detached students from the community because they spent a long time doing it.

#### *Parental Consistency Toward Homework*

Many parents follow their children doing their homework in mathematics. The method of consistency varies for the parents. A parent says: "I give him space for doing homework, yet I check and help when I notice mistakes". Another parent "I ask him if he finishes doing homework. Sometimes, I check but only the reading and writing skills. I am following because my son faces difficulties and I have to be persistent. In addition, I check if he has completed his homework correctly. In case he has not completed them properly, I help him and explain his mistakes and together we reach the correct answers". Another example of parents' consistency stated is in the following: "I help my son. Sometimes, my help is inappropriate because parents are unfamiliar with the new learning material and teaching methods; besides, the assistance I give to my son does not match what is taught in class".

#### *The Motives and Impulses for Doing Homework*

To know what contributes to the student to do homework in mathematics, the questions are: "What are the impulses that help students do homework?" and "Are there any suggestions for teachers to consider?"

The interviews with the students highlighted the existence of impulses and motivations for doing homework among

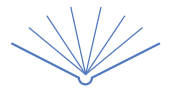
students and this split into two types of impulses, positive and negative. The positive impulses were expressed in one of the students' statements: "Homework is easy and fun. It is a pleasure". Another student added: "homework exposes me to class material and allows me to self-learn and browse various sources of information". On the other hand, negative impulses were expressed in the following statements: "I do homework out of the fear of the grades I will get at the end of the semester because homework has a certain percentage from the final grade in doing homework". One more student says: "homework is a punishment for me. I do homework because I fear my parents at the end of the day checking my friends and punishing me if I haven't done my homework."

#### *Difficulties and Dilemmas in Doing Homework*

The interviews highlight difficulties and dilemmas that students encounter while doing homework. It is based on the personality and the level of academic functioning and socioeconomic status. A student who comes from a low socioeconomic background showed a great difficulty in computerized homework assignments. This was expressed in his statement "I have a hard time with the computerized tasks because I have neither a computer nor an internet". At the same time, another student with low academic performance has shown many difficulties and he expressed it by saying, "I usually do not understand what is required from homework; I feel that I have no strategies how to do homework". Another student said, "at the end of the day, I am tired and not concentrating and when I sit down to do homework, I cannot get organized and sit for a long time. Consequently, I move from a task to another without completing any of them at the end of the day" answer another "I afraid of the Homework, I fried from my Parents if I didn't do it correctly".

#### *Perceptions Toward Canceling Homework: Opposing Parents as Opposed to Supportive Students*

Parents' perceptions toward cancelling homework in mathematics are seen as an important tool for assessing school effectiveness and policy. Homework is a tool in the educational-academic process. The use of this tool can contribute to the advancement of the students' education and learning, or it may cause damage to their development and education. Several interviews revealed positive perceptions of students who support homework cancellation. One of the negative perceptions of one parent, who totally opposes cancelling homework, suggests making a change in the type of the homework. He supports homework that encourages social skills: "I am against this position due to the importance of homework. However, homework and its types should be limited to encouraging research and social skills. We need homework the student can finish in a certain amount of time (relatively short) because life at home is not all about homework and studying. There are other areas of sports, social connections and hobbies children should experience". While students support homework cancellation, there are different positions that support partial cancellation and there is another group that fully supports homework cancellation. A student said: "I am very happy to cancel homework. I think one homework assignment a week is enough". He partially supported the idea of cancelling homework. He suggested a sort of reduction in homework assignments to be only once a week. On the other hand, another student who fully supported homework cancellation argued: "I do not have to do homework at home because it is not fair to complete what the teacher has not done in class". When asked about the social activities, he said, "I am with this position that homework hinders the social relationships and communication with others".



### *Coping with Difficulties When Doing Homework; Parents Vs. Students*

Homework in mathematics is a source of difficulty for some students and their parents. However, it depends on the personality of the student, the parents who are involved in and the environment in which the student lives.

Parents have different suggestions for dealing with these difficulties. One of the parents who does not interfere in doing homework, throws the coping on the student himself, as he said: "We have to trust the child to manage on his own". There are parents who impose coping on a third party like teachers in school who help with coping or on private institutes: "I sent my children to an institute that helps a student do their homework and I pay money." On the other hand, there are parents who give independence in choosing a coping way, yet they become partners, mediators and mentors after learning about their son's strengths and weaknesses, as one parent states: "Teach him to do homework by himself. In the beginning, we have to sit with him, watch him work; learn what his strengths are and what he is having trouble with. If we discover objective difficulties, then we will look for an appropriate help. After a few minutes, we will get back to our own business. We should guide the children to manage with order and organization - organize the bag, return the notebooks and books to their place and so on".

The students suggested other ways of coping with their difficulties when doing homework. One of the difficulties was the effect of the socioeconomic situation, which is expressed in the lack of resources that puts the student in a sort of difficulty that forces him to find a solution that is economically or socially considered burdensome. This was shown in one of the students' interviews: "There are difficulties with online assignments because our homes are not yet ready for internet and my home does not have a computer because of the financial situation. Therefore, I copy from my friends or ask for others' help and sometimes look for help in an institute and pay money for that". Another suggested a way to deal with homework is using social groups and using technology tools like WhatsApp, as one student explained: "I do not understand some of the homework and there is no communication with the teachers, so they solve them using WhatsApp group".

### **Discussion, Conclusion and Suggestions**

This study was conducted to reveal the variety of perceptions among parents and school students in the Arab elementary schools in Northern Israel.

#### *The First Research Question Focused on Parental Involvement And Intervention In Homework*

The findings of the study indicate that parental involvement increases in two ways. The first is the partnership, i.e., working collaboratively toward common goals, which illustrates well the school-parent collaboration; a more detailed description of this collaboration is clearly expressed. It is all about setting common goals in order to be active partners in the process of promoting the community. By contrast, there appear parents' reservations concerning the type of collaboration; parents support positive partnership and dismiss negative partnership. One more parents' reservation is the digital partnership. Parents are concerned due to the partnership that has become more digital today, not face to face, leading to an ineffective engagement.

The second way focuses on the immediate environment of students and families from low socio-economic backgrounds. Micro social factors, such as poor self-esteem

that is affected by low-status or day-to-day conducts in disadvantaged families have a significant impact on children's educational achievements (Glaze, 2017; (Snead & Burris, 2016) and parents' involvement. The research shows that the parents' socioeconomic background relates to their desire to be involved at school. It is found that parents from low socioeconomic backgrounds convey negative messages to their children concerning school achievement. In general, they are less supportive of all connected to homework (Fliesher & Ohal, 2010; Walk & Lassak, 2017). Furthermore, it was found that the socio-economic background of Arab students has a direct impact on the degree of the parental involvement in the school. The higher the students' socio-economic background, the more established the pupils are, the higher the level of parental involvement in Arab schools. In other words, parents tend to initiate contact with the school and their involvement is non-stop. In addition, parents of high socioeconomic status have a strong achieving competitive concept. They are very interested in their children's education. In contrast, parents of low socioeconomic status do not show much interest or involvement because of the lack of resources available to them (RAMA, 2017).

#### *The Second Research Question Focused on Parents' Perceptions Toward Homework*

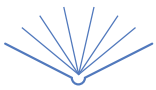
The findings of the present study show that at the declarative level, parents' perceptions towards homework in mathematics are seen as an important tool in assessing students and increasing school effectiveness. However, despite these perceptions, parents argued that homework and parent's over-involvement hurt the student's evaluation and impaired the student's level of responsibility. From a social point of view, parents report that homework strengthens the communication among students.

The findings of the study show that homework is a basis for deepening knowledge, mastering learning skills, developing student's personal responsibility for learning, making decisions and problem solving and encouraging creative thinking. There is a difference between defining the students' social goal versus parents' one (developing interpersonal relationships).

The findings reinforce the claims of the Ministry of Education. According to the CEO's circular, 1996, homework is a tool in the educational process. This use can contribute to the advancement of students' studying and education. The issues related to the advantages of homework in the educational-learning process in general, include learning motivation, addressing students' differences and the learning characteristics of homework.

The findings of the study showed homework from two levels: the positive which states that homework is a tool that positively influences the interaction between teachers, parents and students, specifically from teachers towards students who do their homework on time and with good quality. Those students get a compliment from the teachers and also reinforcement from the parents. Consequently, this gives the students emotional and mental support that may strengthen their self-image. Another positive finding states that homework strengthens social relationships in the family; it becomes a positive experience at home (Abd Algani, 2019; Xu, Fan, & Du, 2017;).

On the second level, the research shows that homework harms the relationships that are expressed in acquiring negative habits; students lie to skip doing homework. In addition, parents report that it is very difficult for them to deal with homework because most of them do not know or



understand the school material. Consequently, they do not have the ability to help their children, so the students come to the class without doing their homework. Besides the inability to help their children, parents claim that they cannot send their children to private teachers because of their financial situation. Homework causes little conflict between teachers and students, between parents and their children, and between teachers and parents; it is a meeting point between them on the subject. Some define this meeting point as a "battlefield" or "nightmare" for elementary school children (Catherine M., Scott, & Glaze, 2017; Núñez et al., 2015).

Homework in mathematics should be smartly designed. It does not only maintain the students' learning, but also connects the student's family with the school. Homework is a window through which parents can see what their children are learning. It has been found that students are less successful in school when their parents are perceived as intrusive and dominating. Motivation is an important key in learning and parents can subconsciously cause harm by not allowing their children enough space and autonomy to do their homework.

Another important aspect the study examined is the characteristics of good homework according to parents and students. The findings indicate the importance of homework. It was emphasized that a good homework is a challenging homework that makes a student to be curious and it is close to their world.

Another feature that emerged from the parents' and the students' responses is having lessons that are based on media with reference to another interpersonal group parameter that allows students to use more technological and experiential tools. This finding supports the study that examines integrating new technologies into learning, especially the challenges associated with homework (Xu, Fan, & Du, 2017).

Certain devices that value the organizational components appear while doing homework have been developed. One of these devices is the Homework Management Scale (Xu, 2008; Yang & Shoo, 2015). Parents and pupils raised another feature which is addressing the student's level of difficulty while noting that good homework is about giving a variety of assignments, guiding the students to solve the assignments in a creative way that serves a clear purpose; appropriate to each student's level, and the topics being taught in the class (Catherine, Scott, & Glaze, 2017; Kitsantas et al., 2011).

Another result in this field referred to the choice attribute, i.e., homework should be chosen to meet the students' needs while providing obligatory and optional tasks. Those results were also supported and confirmed by Cooper's study (2003) which examined good homework characteristics. The research found that shorter tasks that are more frequently given have had a greater impact than long and ongoing tasks. For homework to be great, they have to arise out of need and be meaningful.

In this study, parents' consistent ways of watching their children doing their homework were also examined. The results indicate differences in the parents' consistency. Some parents intervene in their children's homework only when spotting an error in their children's homework assignments. They support their children while giving them independence in doing their homework. Some parents test their children's literacy skills in case of difficulty and children need persistence (Kathleen & Snead, 2017).

In order to know what makes the student do homework, the findings indicate two types of impulses: positive impulses that show homework as doable and a sort of pleasure,

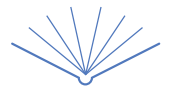
expose students to the material taught in class and allow students to self-learning by browsing various sources of information. The negative impulses indicate that students do homework out of fear because it will affect their grades at school. In addition, students expressed the negative impetus that homework was a punishment for them and that they do homework because they fear their parents and fear of deterioration in terms of achievement. Cosden and Macias (2001) found out that the student's achievement did not improve due to doing homework.

This current study enriched the existing literature concerning the difficulties that students face when doing homework. A student from a low socioeconomic background showed great difficulty in computerized homework assignments due to the lack of digital tools. Another finding relates to the student's academic achievement. Students with low level of performance demonstrate many difficulties especially in understanding what is required in homework because they do not have any strategies for how to do homework. Another possible dilemma is the damage that could hit the administrative functions, such as time management, autonomous management with learning equipment and material, organization and difficulties with ongoing attention, and sitting for a long time.

Another issue that needed clarification after the decision of the Ministry of Education to cancel homework is the parents' perceptions towards cancelling homework. According to the parents' perceptions, the findings indicate that homework is an important tool for assessing school effectiveness and policy. Homework is a tool in the educational-academic process. The way of using this tool can promote students' education and learning or alternatively cause harm to their development and education. Many parents have shown negative perceptions and opposed to cancelling homework completely. They support a sort of partial cancellation and suggest making some changes in the type of homework. They support the type of homework that encourages social skills and research. In addition, parents suggest minimization in the number of housework tasks, exercises and assignments given to the students on a daily basis. The reason for this suggestion is that homework allows the parent to share his child the material that is taught in school in the various subjects. As a result, it sometimes allows parents to intervene and contact the school if they notice that the school is burdening their son with homework and also provide assistance in case of facing difficulties in doing homework. On the side, we have the students who support homework cancellation, because it stresses them, impairs their creativity in their leisure time due to its length and spoils their time organization and social connections.

These results were supported by Haddad (1995), Donald Snead and Burriss (2017), and Eunsook, Min, & Yun (2011) studies that support cancelling homework because it creates more burden on children and prevents them from participating in important informal activities. Moreover, homework creates negative perceptions towards the school and learning in general, causes parental intervention that includes stress, embarrassment, and confrontation with the children that leads to strengthen the negative behaviors among students, such as copying homework in mathematics. Homework depends on the personality of the student and the parents who are also involved in the environment (Kathleen & Snead, 2017; Catherine, Scott, & Glaze, 2017).

In this study, we presented many of the dilemmas, the disadvantages and the solutions. The findings indicate that parents cope by giving independency to the children to manage on their own. On the other hand, there are parents



who give independence in choosing a coping mode yet; they are partners as mediators and guides after realizing their children's strengths and weaknesses.

The students suggested other ways of dealing with difficulties when doing homework. One of the difficulties, students face, was the impact of the socioeconomic situation which imposes a lack of resources that position the student in a sort of difficulty forcing him to find a solution that is economically or socially demanding. As a result, students copy or seek their friends' help and it is sometimes by seeking private lessons and paying money.

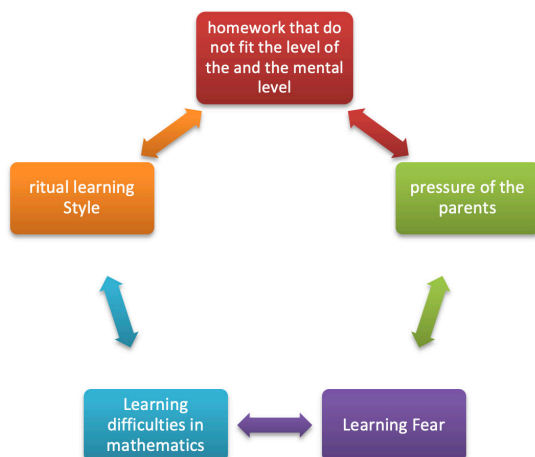
**Implications**

Parents' involvement and engagement in the issue of homework is a topic that has recently put on the educational agenda. This issue engages parents, policymakers in the Ministry of Education, educators and the public in general. In most schools in Israel, the educational staff feels that the relationship between the school and the parents requires re-examination, reflection and reconsideration (Fleischer, 2010). The present study joins extensive research literature from recent decades on the issue of parents' and students' involvement in doing homework, in different cultures, and in different geographical areas which indicates the great significance of this topic.

This study is a meaningful contribution to many fields. On the personal level, as a special education teacher, with students with learning difficulties and low socioeconomic status, it gave me new light on how to change homework and give in different levels so to accommodate more students and raise the positive self-perception among both students and parents. Research also gave me strategies on how to help students and parents within a supportive social group. This study contributed new knowledge to the field of researching parental involvement in homework, in families with low socioeconomic status in the Arab sector. The existing literature on this specific topic lacks knowledge in this area.

The researcher has developed a cycle for the relationship of the homework in mathematics to educational attainment and the learning style, and he called it the "Homework Cycle" (see fig. 2). It should be noted that the homework that does not fit the level of the material and the mental level of the students and the pressure of the parents leads the students to the ritual learning style and this leads to fear of the educational topic and difficulties in the educational topic as follows:

**Figure 2. Homework Cycle**



In light of the findings of the present study, the following recommendations were formulated:

Increasing parenting skills, i.e., parental involvement in school increases parental skills, making them better equipped with the knowledge to provide assistance to their children in school-related activities. Through the relationships with the teachers, parents learn important information about the school's expectations of the children; they also learn how to help with homework in mathematics and how to improve their children's learning at home. When parents get involved in their children's schools, they can be more effective. Schools need to run training and coaching programs for teachers, educational counselors, parents and students.

We need to deal with task length and homework in mathematics assignments and time needed to do homework at home, while adjusting the frequency of homework; the length of time needed to complete should be tailored to the ages of students: grades 1 - 3 get from 1 to 3 assignments per week. Time for each task is up to 15 minutes. In grades 4 - 6, 2 to 4 assignments per week, with 15-45 minutes dedicated to each assignment. Grades 7 to 9 should get 3-5 assignments per week. Each task lasts 45-75 minutes (Cooper, 1989).

The goals of homework should vary from age to age. Thus, in the elementary grades, the goals are: strengthening positive attitudes toward learning and school in general and developing learning habits and personal variables such as, internal focus and personal responsibility for learning. In the further grades, the goals are developing various learning skills and deepening control over specific skills.

Teachers will develop diagnostic skills to identify students' personal preferences when doing homework aiming to adapt teaching methods and/or homework assignments.

Teachers, educational counselors, students, and parents will be aware of the interpersonal differences in learning preferences and adapt the learning environment and homework assignments to the individual. By this approach, homework should be student-centered.

Homework should be balanced. It should encourage and enhance learning, but too much homework can damage. The National Education Association in the U.S. supports the "Ten Minutes Act", which recommends giving ten minutes of homework for each school year. This means that first graders receive ten minutes; second graders receive twenty minutes and so on, so that 12th graders receive a maximum of two hours of homework per day.

**Methodological Reservations and Suggestions for Further Research**

The main limitations of the current study presented below are connected to the methodological aspects - both in relation to the research procedure and also to the qualitative research tool. This research is a qualitative one which is based on phonological and interpretative perceptions, which can be presented in-depth (see Friedman, 2005, pp 231-239). The research shows how homework is perceived by parents and students themselves. Therefore, it does not allow inclusion in the usual sense (see Friedman, 2005, pp 244-249). This layer of the research does not convert; therefore, the findings cannot be generalized to the general population.

In addition, choosing parents and students for this study was a purposeful sample to best present appropriate





representations of the different levels of parents' involvement and intervention in homework. This is in contrast to the goal of representing the distribution that characterizes all parents from all social levels.

Suggestions for further research: developing a model and approach in raising the motivation in doing homework in mathematics with reference to:

1. Source of motivation: intrinsic motivation, parents' motivation and teachers' motivation.
2. The quality of motivation: it relates to the student's preference and organization. In other words, it refers to structure, order, space and time. These components represent the individual's preference for these questions: Which homework to do? In what order? Where? and when?

In conclusion, the current research discussed with four questions. The findings of this study show that most parents and students identify the goals and importance of homework. It was found that among the barriers that restrict parents and students when doing homework are the length and amount of homework tasks. Homework affects the parent-teacher-teacher relationships in two directions. The study offers solutions and suggestions for parents and students to advance the student on three levels: social, educational and interpersonal.

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# Waldorf Approach in All Aspects

Ceren KOCA<sup>a</sup>

## Abstract

Jean Jacques Rousseau (1712-1778) revealed the paradigm of free thought that formed the basis of libertarian education in the 18th century. Rousseau's theory of education is based on the natural and pure nature of the individual. The main point he wants to emphasize is the fact that any individual is born sinless and right, but all the institutions, including society and education, destroy the integrity and cleanliness that one brings to birth. According to Rousseau, education is not about the imposition and imposition of certain systems on the child, but on the contrary, education must be a system that provides for the natural development of the child (Ergün, 1994). Many western educators such as Salzman, Pestalozzi and Froebel were also influenced by Rousseau's educational philosophy (Ata, 2003). On the other hand, Rousseau's approach to human nature has been a philosophical/theoretical starting point for alternative educational approaches. The emergence of alternative education approaches also affected early childhood education and different approaches rised in preschool education. One of these approaches is the Waldorf Approach, developed by Rudolf Steiner. Consequently, the purpose of this paper is to give information about Rudolf Steiner who is an early pioneer of the Waldorf Education.

**Keywords:** Alternative Education, Waldorf Approach, Rudolf Steiner

## Introduction

Steiner, the founder of the Waldorf approach, was born in Kraljevec in 1861 as a child of a German family. Steiner studied at a technical school in Vienna and became interested in mathematics and science at an early age and began to consider it important to provide people who could not sense the spiritual world with a way to learn about spirituality (Easton, 1980). In this context, Steiner studied with great admiration Goethe, a German poet, philosopher and scientist who lived in the 19th century and even began to give meaning to his own spiritual experiences through the work of Goethe (Carlgrén, 1993; Easton, 1980). After Steiner began studying Wolfgang von Goethe's work in 1879, he worked on methods for the development of educated spiritual thought, and in 1883 he began to organize Goethe's Natural Scientific Writings for the study of one of his professors. He made a connection with Steiner Goethe through spiritual observations of Goethe; the reason for this is that he is the first person he has ever known to be able to establish a conscious connection with the spiritual world. Although Steiner understood that Goethe could not get an "emotional" perception that is capable of feeling reality on ordinary perceptions, he saw that Goethe was very close to it, so Goethe's work influenced Steiner throughout his life.

Steiner was an active participant in the Theosophical Society between 1902 and 1913 (Easton, 1980; Richards, 1980) in order to help his own "above-emotional" knowledge. In 1879, H.P. Blavatsky and H.S. The Theosophical community founded by Olcott in New York to support spiritual development (Richards 1980). According to Steiner, theosophy (the whole philosophy that all religions and beliefs are supposed to find "the Divine", and thus all religions and beliefs have a part of the truth) generally emphasizes Eastern religious beliefs, Steiner has gradually moved away from this community because it was not based on scientific facts and observations (Richards, 1980). Also, Steiner had a hard time believing the idea that Jesus would come as a resurrection, and this was also a factor for leaving the community (Richards, 1980). As a result, many German members of Steiner and Theosophical Society founded the Anthroposophical Society in 1913 (McDermott, 1984; Richards, 1980).

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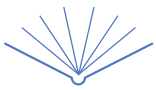
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## Literature Review

### *Philosophical Foundations of the Waldorf Approach*

The philosophical foundations of the Waldorf approach are based on the philosophy of critical idealism, known as "anthroposophy". Social events that emerged in the late 19th and early 20th centuries and the economic and social consequences of these events; prepared Rudolf Steiner to carry out studies on the position of the individual in the newly formed social structure. He then put forth a different approach called "Waldorf" by making these studies systematic later (Gürkan and Ültanır, 1994).

In Steiner's statement, Anthroposophy is not an "intellectual science" but a "spiritual science" that requires a combination of inner perception and objectivity (Richards, 1980). Steiner (1965, 1992, 1994) notes in his writings and lectures that the soul is different from the mind and that spiritual humanity is the essence of the universe (Richards, 1980).

Nowadays, modern thinking has begun to account for what is being measured is largely observer dependent (Miller, 1992). Measurement (observation or knowing) always requires a person (observer or informational) who influence the interpretation of the results (Miller, 1992, Richards, 1980). Steiner and a multitude of spiritual, esoteric body (all kinds of knowledge, doctrine conveyed to only a narrow circle that is not communicated to anyone except a particular group of people) is the manifestation of spiritual activities that are visually observable, and this makes them above emotion or only an over-perception of their existence is developed. With the acquisition of anthroposophical education, which is a spiritual science, people can acquire this extreme perception and make an invisible reality appear (Richards, 1980).

Basic Principles of Anthroposophy: Anthroposophy is also defined as a special system in which each individual develops his own developmental capacity with the wisdom of humanity. This system is shaped by the environment in which the individual's internal tendencies are lived and influenced by the cultural, academic, and social aspects of the environment in which they grew up (Whedon, 2007).

To understand that anthroposophy was behind Steiner's educational ideas, it is necessary to touch upon the principles that Steiner refers to as "three births of mankind" and "three times human". Steiner's explanations of "three births" and "threefold human" first appeared in his book, *Education of the Child in the Light of Anthroposophy* (1965), published in 1909. According to Steiner, the first birth is the birth of the physical body that emerges immediately, the second birth is the birth of the etheric body, and the third birth is the coming of the astral body that emerges in adolescence (Steiner, 1965). The physical body is born with birth, and it is the life that is sustained by cell metabolism. The etheric or earthly body is an energy field that interacts with both the physical world and the different bodies (Steiner, 1965). Steiner (1965) tells us that the etheric body is on the physical body and is present in animals and plants as well as being very important in man. The etheric body cannot be perceived by ordinary senses but can be seen by those who have developed the correct perception organs. It is believed that the etheric / earthly body enriches the powers and materials of the physical body and exposes its internal movements of growth, reproduction and body fluids. The etheric body may become habitual, memory, temperamental and thoughtful during its development (Steiner, 1965).

The third birth, the astral body, is believed to be pain, pleasure, passion and nudity, which is why it is the instrument of the senses. Steiner (1965) plants must reflect things that are physically fruitful because they do not have such senses. Steiner (1965) states that these three births are different organizations, organs or members who are in the human being and are a quadruple. This fourth member, which is present in human beings, is a man of ego in other words "I". When one defines himself as "I," one defines his own individuality and distinguishes himself from others. All these organizations or organs influence the growth of each other throughout their lives.

Steiner (1965) describes the three-fold explanations of human beings as follows; It includes the relationship of the human body, spirit and soul with the main functions of desire, feeling and thinking. Steiner (1965) believes that the limb system, is extremely important for the child during the period from birth to seven years of age. If cognitive development is hastened and desire is squeezed at this moment, a destructive force will come into play in the process of thought. After the development of the good, it will develop in the first years, not to think, to feel. However, in every child, mental development can progress after emotional development (Harwood, 1979).

Steiner (1965) also states that through the limbs and the metabolic system, the body naturally comes to develop, and that the senses emerge through the heart and the rhythmic system, and that the spirit that comes to mind through the brain comes to the fountain. Steiner thinks that the body needs nutrition in the same way that the spirit needs nutrition for development. Steiner argues that the basis of the functions necessary for soul feeding must be taken in childhood.

### *Child by Anthroposophical Perspective in the Waldorf Approach*

Being conscious of "the three births of mankind" and the four different bodies that exist within man has very important implications for how anthroposophers are educated, enumerated, respected, seen, guided and educated (Harwood, 1979). Thanks to anthroposophical knowledge, educators and parents understand what is appealing to the soul of a developing child. Similar to the explanations for child development, the anthroposophical view on development also considers the first seven years to be the most important for children to develop in the best way (Almon, 1992). Child-educators and educators can understand how understands children and appeals to the inner world of the child, how they are developing and closely following each child's individual development. In this context, Rudolf Steiner's understanding of the periods from the child's point of view becomes important.

Steiner argues that there are three universes for seven years for both physical and mental development. These phases are expressed as physical consciousness phase (0-7 years), perceptual consciousness phase (7-14 years) and intellectual conscious awareness phase (14 years and over).

Phase of Physical Consciousness: Steiner emphasizes the importance of the first seven years of a child's life when they considers healthy or unhealthy development of an individual in their work. The developments and changes that have taken place during these years provide the prerequisites for the mental and moral life of the individual and the shaping of the character of the child (Salter, 1987). Steiner (1965) believes that children before the age of seven establish a



relationship with their environment through imitation and sampling. As a result, it is important that adults who interact with the environment and it can be thought that the child imitates this process (Carlgren, 1993; Salter, 1987). In addition to understanding its importance in terms of children during this period, it is also necessary for children and educators to understand how important it is for the child to perform music-related activities, play games, and listen to the story. Until the age of three, the child imitates the characters around him, but most of the time he is unconscious (Carlgren, 1993; Steiner, 1965). Imitation becomes a conscious movement after three years of age and is the first action that the child will consciously undertake to learn and develop (Carlgren, 1993). For this reason, the physical environment around the child should be so appealing to the child's feelings. The environment is both the material surrounding the child and the behavior of the adults around the child (Willson and Wierbicki, 1988).

It is important to remember that during this period, the development is the child's etheric body and that the main focus of this development is the child's ideas, habits and memory. At the same time, the environment in which the child lives will be a "protective cover" that will give the child love and warmth, as well as provide good examples to imitate and follow. For this reason, educators are always required to pay attention to what they say, do and their moral values (Almon, 1992). Both educators and child-educators should observe themselves very well and ask themselves: "Did I approve this if the child would imitate it?" (Querido, 1987). In these early years of the child, songs and rhythmic voices appeal to the child's inner world and imagination well (Willson and Wierbicki, 1988). The dance movements in the music rhythm have a strong influence on developing physical organs and lower limbs, but nowadays it is seen that they are not given enough importance in preschool education institutions (Carlgren, 1993; Querido, 1987; Steiner, 1965).

Playing a game is also a very important factor in the development of a child. The child learns about life by playing games. Playing games will meet situations that may happen in the future (Salter, 1987). With the gaming activities, new situations related to life come to the fore, and the child needs to establish friendship and problem solving. At the same time as playing games, child growers and educators develop the mobility and desirable bodily organs of the limbs they are trying to develop in children younger than seven years (Edmunds, 1987). Playing games and acting like adults is a way to participate in the world. For this reason, the game should include painting, modeling, cooking, sewing, constructing and doing things, singing, listening to stories and portraying stories (Edmunds, 1987).

In the preschool years, when thinking becomes more visual and desirous, play becomes more creative, and examples become so important in terms of the development of the child that the child's intelligence evolves by taking part in fantastic events (Grunelius, 1991). Again, it is believed that the child's consciousness is full of imagination (Salter, 1987). Child growers and trainers can also improve the child's intelligence in this period by telling stories that are visual and rhythmic. According to Steiner (1965), stories and tastes related to nature address the child's inner world because these stories reveal spiritual truths that enable the child to visually understand the moral concepts and facts (Grunelius, 1991, Salter, 1987). They should remember that the child's mind power is visual during the first seven years of the child's life, keeping in mind that adults at this age are not the basis of the child's thinking but the wish-based foundation. Salter (1987) likens children's thought processes to painting. Since

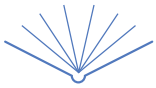
the child's visual thought and the request are closely related, their movements are also creative, because the child moves and creates as it thinks visually. It is not the end of this activity. On the contrary, the child is visually impaired during the activity. The child must listen and observe the characters of the environment so that the child can develop the spirit further and sustain the imagination of the soul (Salter, 1987).

**Perceptual Consciousness Level (7-14 years):** With the change of teeth around 7 years old, children become aware of new awareness, self-awareness and environmental awareness (Edmunds, 1987). Children aged seven and eight think visually and their way of thinking is a mood of emotion; (Edmunds, 1987). It is also important that the child has an authoritarian figure between the ages of seven and fourteen; because at this age the child must trust someone else with both heart and soul (Edmunds, 1987; Richards, 1980; Steiner, 1995). For this reason, the teacher stands in front of the child as a representative of humanity, and the child learns to trust mankind through the teacher (Edmunds, 1987). During elementary school years, the ethereal body works with education rather than education (with more teacher influence and orientation). A child's etheric body is developed by the teacher with pictures and examples, and the child's imagination is directed (Steiner, 1965, 1995). Visibly, what the child sees glimpses are things that affect him more after seven years of age (Steiner, 1965). The child's emotions are developed by the adult through illustrations and shorts about nature, past stories and historical events, so that beauty and artistic emotions are aroused (Steiner, 1965, 1995).

**Intellectual Awareness Level (14 years and over):** Physical, emotional, and mental development are integrated in this period (Ogletree, 1997). The inner world feelings (the feeling of creating their own world) give the adolescent a power that has not been before. Abstract thinking skills developed during this period (Aydin, 2009). Steiner states that in this period the individual is the investigator of the truth, the only thing that he deals with is reality. At this stage, according to Steiner, the analytical thinking ability develops in the individual, and as a result, the individual creates self-discipline and realizes his own independence (Uhrmacher, 1995).

#### *Historical Development of the Waldorf Approach*

After World War I, Germany was in ruins and those living there had to rebuild their country. At this point, it is no coincidence that Rudolf Steiner's Waldorf education began to develop while Europe and the rest of the world were having a very difficult economic period. Steiner (1965, 1993, 1995) emphasizes the importance of creativity and moral judgment as much as the importance of intellectual development of teachers. This will provide a holistic education that will balance the physical, emotional and intellectual needs of the students, and the differences of each child will be appreciated, and the child will develop at his own pace (Wilson and Wierbicki, 1988). Steiner (1995) seeks to develop a curriculum that integrates academics and arts with a unique teacher-student relationship that will awaken students' respect for goodness and integrity. A curriculum and education formulated in this way will create a more humane society in a world that needs more moral and social reforms. With that in mind, Steiner (1995) defined the "three dimensions of social order" which he thought would be effective in moral and social reform. Three dimensions of social order; (a) politically independent cultural life, self-directed and sustainable; (b) economic life, free national and international political influence based on the principle of solidarity; and (c) a strong and self-limiting government that can and will take place spontaneously according to



the time consciousness (Steiner, 1995). In July 1917, a class Rudolf Steiner, made a proposal to the German and Austrian governments and elaborated on the principles of how the three dimensions of social order could be realized. In this talk emphasized that a real society can only be possible through the cultural development of people. "thinking", "feeling" and "wanting" abilities.

In this context, others such as Rudolf Steiner believed that it was necessary to create an education reform to rebuild Germany and to teach future leaders of Germany how to create and maintain a true human society (Easton, 1980). In April 1919, Steiner made a speech to his employees at the Waldorf-Astoria Smoke Company, and during this conversation he explained his vision and the role of education in human development. Emil Molt, who is the manager of the Waldorf-Astoria Cigarette Company and a student of Rudolf Steiner's Anthroposophy, has proposed to Steiner to establish a school on the basis of his views (Barnes, 1991; Carlgren, 1993; Easton, 1980; Steiner, 1995). Shortly thereafter, two factory workers, Steiner, Molt and the first teachers at the school, came together and the German Ministry of Education approved the new school on the condition that it met the standards set for public schools at the end of the third, sixth and eighth grades.

In this newly opened school, what and how should be given to students is determined by the pedagogical decisions of the school. The first Free Waldorf School was founded on September 7, 1919. The Free Waldorf School was founded on the idea of a Threefold Social Organism and for social change (Carlgren, 1993; Easton, 1980; Steiner, 1995). Through Rudolf Steiner's spiritual vision and his own involvement, the teachers tried to teach the students the power of thought, depth of emotion and desire. According to the teachers, the development of the students in this way would make them a better part of the "Human Community" and better prepare them for changing the world around them (Steiner, 1995). The Waldorf approach, an educational approach incorporating Steiner's philosophical point of view, has quickly become a widely accepted approach throughout the education system worldwide after the first Waldorf school opened in 1919.

#### *Waldorf Education in the Early Childhood Education*

It is very important to have a very sensitive and conscious training in the natural behaviors of imitating the adults around the child, from the preschool age to the time of the second child. According to Steiner, preschool children are "organs of feeling" that attract the world and copy what they see (Carlgren, 1993). It is seen as a playroom, not as a classroom, where the kindergarten teacher has rich possibilities for children to develop their imagination and imagination (Grunelius, 1991). Those in the Waldorf preschool and kindergarten are actually seen as "breathing" in terms of activity (McEldowney, 1997). This movement, defined as "breathing", occurs when children are playing games while the teacher is doing activities such as cooking, sewing, wrapping, painting and drawing pictures. Children are allowed to come in freely every morning and participate in the activity the teacher is doing. This can happen both with the help of the teacher and with the willingness of the student to participate in that activity. Students can paint, sew, cook, etc. Once completed, they can return to play without intervention by teachers (until the games start to become destructive). Average playing times range from sixty to ninety minutes. In addition, children can read the story every morning, sing poetry or singing a song, and portray the stories (Grunelius, 1991).

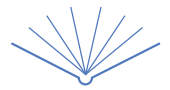
In the Waldorf preschool education method, children are expected to participate in group activities under teacher leadership. Within one day, the program is prepared considering the holistic development of children and this program includes activities such as drama, art, and music. Studies in both the mixed age group and the single age group can be carried out within the class (Hughes, 2013).

#### *Waldorf Education in Elementary School*

The education of children entering the second seven-year period of their life is much different from the first seven years. From a period when the child lives with the limbs of a small child, a period of time has begun to develop in which the rhythmic systems are beginning to develop (Steiner, 1965, 1995). Individuals' hearts and lungs are now considered to be the most important organs with which the periphery will deal (Easton, 1989). The heart speaks about the emotions and feelings of the individuals, which is the purpose of the education given in this period. As a result, education between the ages of seven and fourteen concentrates on his artistic, poetic and imaginary qualities to reveal the emotional life of the individual (Easton, 1989).

A preschooler wants to act like an adult, while imitating the actions of their parents or teachers (Carlgren, 1993; Steiner, 1995). Waldorf schools provide training with the same teacher from the first year to the eighth grade when possible (Carlgren, 1993). For this reason, the person undertaking this role has a great responsibility; the model should be a human and have strong relationships with all his students. This relationship is based on the spiritual development of the teacher and the mutual respect and affection between the child and the main teacher (Easton, 1989). Steiner (1995) believes that if a teacher remains with the children for eight years, a human relationship develops, because the teacher also develops with the students. If the teacher does not have enough knowledge of the subject to be addressed in the past eight years, the teacher must develop with the students, while still acquiring more experience and knowledge (Easton, 1989). Since the students are not given official grades in the first eight years, the teacher assesses their work because they know the student and prepares a detailed report on each student at the end of the year (Carlgren, 1993; Richards, 1980). For this reason, it is very important for a teacher to know and support each student so that a teacher can really understand and support the growth and development of the student (Edmunds, 1987).

Because the purpose of the Waldorf education is to educate the child as a whole with his head, heart, and hands (Trostli, 1995), the curriculum from the first to the eighth grade is quite broad and the academic subjects are balanced with artistic and practical activities such as dyeing, clay sculpture, knitting, wood cutting and sewing. Each year the curriculum is changed, because the subject is chosen not for its intellectual significance, but for its special spiritual qualities manifested at any age (Easton, 1989). It is therefore important that children stay together in the same age group from the first year to the eighth grade and be with the same teacher. Steiner schools organize their days in a more rhythmic manner compared to most educational approaches in public schools (Easton, 1989). For example, the day starts with the main course, which can last from three to four weeks, lasting one to two hours. All subjects are taught in an artistic way and students prepare the main course book and equip it with colors (Carlgren, 1993). After the afternoon, movement activities such as handicrafts, gardening, music and rhythmic movement, gymnastics and group games are taught (Richards, 1980). Foreign language is taught in



Waldorf schools and counted as a course. In general, two foreign languages are taught by expert teachers and the specialist speaks only in their native language, so students never hear the language spoken incorrectly (Richards, 1980). These languages are taught in smaller classes in a rhythmic manner, and grammar is learned naturally. From the 1st to the 3rd grade, children learn the alphabet with beginner level information including writing, reading, poetry, drama. People's stories, folklore, fables, and excerpts from the Old Testament are read. Progressively numbers, simple addition, subtraction, multiplication and division operations are shown. In order to get informed, nature stories are explained, activities such as house building and gardening are done (Schwartz, 1997). Writing, reading, spelling, grammar, poetry and drama are taught from the 4th to the 6th grade. Four mathematical operations are glanced, and fractions, geometry and percentages are taught. Norse is used to teach history, and stories about ancient civilizations. At the same time, zoology, botany, beginner physics and geography are taught (Schwartz, 1997). 7th and 8th grades are continued with creative writing, reading, poetry and drama. Medieval history, Renaissance and country history are taught, and physics, basic chemistry, astronomy, geology and physiology in the field of mathematics and science (Schwartz, 1997).

### *Waldorf Education in High School*

Waldorf education continues in high schools in many schools. Thinking is developing in this period of the life of the student and the student is acquainted with many other teachers. Art continues to be the main teaching mechanism in this period (Carlgren, 1993). Because higher education institutions require evidence of the performance of students, students are graded, but teachers' assessments still have significant weight and prerequisite within the school (Easton, 1989). Waldorf high school teachers also think that the most important task of a teacher is to facilitate the integrity of each student (Easton, 1989). In doing so, teachers ensure that students develop as stable, ego-possessive beings who can decide on their own, solve problems that are so crucial to their peers in society, and can develop as productive adults. The Principles of the Waldorf Approach

In his many talks on child development, Steiner emphasizes the importance of children acquiring three human-specific qualities and stresses that a natural ordering in their development leads them to walk, speak, and think (Salter, 1987). As the child progresses in each developmental area on its own initiative, it naturally contacts both the world and the spiritual world (Easton, 1989). After learning to talk, the child begins to think and starts to say "I" to himself around the age of three, seeing himself as a separate individual from others (Almon, 1992, Harwood, 1979). Steiner says that this is the first turning point in a child's life, and that children are beginning to have their first memories with their own consciousness (Easton, 1989).

In line with Steiner's thought, the following basic principles have been established for the construction of Waldorf schools (Steiner, 1995; Foster, 1984; Gürkan and Ültanır, 1994)

1. All children have the right to benefit from this educational system without any distinction in terms of social class, ethnicity and belief.
2. Waldorf schools must be economically and politically independent of the state. This independence should be regarded as a necessity for the application of the concept of democracy in Waldorf schools.

3. Waldorf schools should be managed by teachers who implement the practices themselves, not by an administrator.

4. The Waldorf schools should embrace social issues and be associated with the child's true life.

5. Individual differences of children should be respected and a training program should be organized according to the potential and development level of each child.

6. The child's education should continue with the same teacher each year, not with a different teacher. In this way, the teacher can follow the child's development and prepare the appropriate educational program for the child.

7. Assessment in Waldorf schools requires that the child be observed in a developmentally careful manner. In the light of these observations, the teacher should make arrangements according to the development areas of the child. Classical assessment instruments should not be used and longitudinal observational evaluations should be prepared separately for each child in a report.

8. At Waldorf schools, the development of the child should be holistically addressed and all areas of development should be supported.

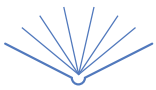
It is the most general principle of Waldorf education (Schmitt-Stegman, 1997) that by developing self-consciousness, the child's real potential is freed up, so that the child's potential reaches the top level and humanity and the world become a useful element.

### *Learning Environment in Waldorf Education in Early Childhood*

Steiner considers the environment that encompasses classrooms, gardens and other building areas used by children as the first area of learning. The aesthetics of the playroom play a key role in the overall learning sense, which is relevant to children's developmental needs. The Waldorf preschool education environment supports children's beauty and order emotions (Williams and Johnson, 2005).

Steiner states that children are largely sensitive to their surroundings, have five senses and knowledge of the environment and gain experience with their bodies. For this reason, Steiner especially focuses on subjects such as the color of walls, class materials and furnishings. Steiner recommends that the walls of the preschool environment be painted with plain and bright colors without the use of wallpaper. Colors play an important role in the Waldorf approach. For example, extremely bright colors are overactive, gray and brown tones are bleak, plain and bright colors can have a warm effect. In the Waldorf approach, the classes evoke a sense of continuity with their design and function. Daily work creates an atmosphere that replaces the traditional home environment providing the rhythm of family and community experience (Williams and Johnson, 2005).

In Waldorf schools, kindergartens are perceived as an extension of the home, and it is aimed to maintain consistency between kindergarten and home. Classes usually include a wooden kitchen area where children can gain daily living skills, wooden chairs, tables and seats suitable for children's sizes (Stehlik, 2008).



In the Waldorf approach, most of the materials in the nursery room are soft and handmade. For example, plush animals, dwarfs and elves are usually made by the teacher (Granelius, 1991; Richards, 1980). These materials are so simple that they do not dominate the imaginations of children, they are intended to play games. Materials commonly found in Waldorf classrooms include polished wood pieces, silk and cotton fabrics, wool to weave, stones and sand. In the room, there is usually a wooden kitchen area. Children imitate adults in their lives by cooking methods, sleeping habits, and looking at babies or small animals during play (Richard, 1980).

#### *The Role of the Teacher in the Waldorf Approach*

Teacher training in the Waldorf approach is based on the lessons and writings of Rudolf Steiner (Williams and Johnson, 2005). To become a Waldorf teacher, you must apply to the Waldorf Teacher Training Institute as a graduate of at least one-degree program and complete the 1060-hour certificate program successfully. The Waldorf Teacher Certificate program is a holistic program that focuses on Steiner's teachings, child development, the Waldorf approach, and the cultural development of the teacher. This process includes the theoretical training of the Waldorf teacher candidate, the observation in Waldorf schools and the practice in Waldorf schools. Successful completion of this process makes it possible to receive teacher certifications from Waldorf teacher candidates (Wessling, 2005). Steiner argues that people who are defined as teachers must accept their own roles with great enthusiasm. According to him, not everyone can be a teacher, but those who choose to be teachers must have made the right decision about the responsibility they have. Feeling the enthusiasm of the teacher, the child will have the same enthusiasm. Another task for the teacher is to protect the children attended from physical, emotional, social and psychological aspects (Williams and Johnson, 2005).

According to Waldorf teachers, real education does not work unless the school is inspired entirely by the body-spirit relationship and does not work for the human's threefold nature (Easton, 1989). The reason is that the soul-spiritual existence of the child develops only when the individual is ready and talent shows. The Waldorf educators believe that after that the children are ready for the world, the ego is powerful and self-sufficient (Querido, 1987; Richards, 1980). From an anthroposophical point of view, Waldorf teachers are perceived differently by most students than educators. The teacher is also a thinker, a scientist, a poet, an artist, a musician, and an environmentalist (Edwards, 2002). The job of the Waldorf teacher is to help the child achieve the material and spiritual realities and earthly existence of the child, and the greatest benefit from them (Ogletree, 1996). The Waldorf teacher needs to understand the development of the child. Teachers also need to have similar behavior with Steiner's point of view on children, working with children and understanding them (Stehlik, 2008). Waldorf teachers do not use direct teaching as a teaching method in their kindergarten. Teachers consider this method to be a method that has a negative effect on the child's participation. Waldorf teachers encourage children to discover their own. Waldorf teachers teach children how to explore the world through play (Williams and Johnson, 2005). The information is learned by singing songs and playing animated games, not by teaching children how to read and write in formal ways (Richards, 1980). For Waldorf teachers, it is important that children's parenting experiences are much different than primary school experiences (McEldowney, 1997). For this reason, children are allowed to be children, and their

wishes for mathematics, reading and writing will be on their way to the first class.

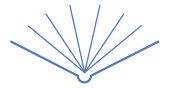
#### *The Role of the Family in the Waldorf Approach*

The Waldorf approach involves family and education. The Waldorf approach knows the role of families in the development of the child. So, school-family relationships are quite frequent and strong. Information gathering for families is organized, teachers monitor how long families watch TV at home, make home visits, provide family education services (Kurtulmuş, 2012). In Waldorf kindergartens, a committee is established between parents and teachers so that family participation activities can be sustainable. It is expected that their parents will take part in these specially created committees. The "family school council" of families consists of setting up a discussion forum for families to determine their needs and conducting an effective work in the Waldorf school, responding to parents' questions, encouraging parents to contribute to the school, providing home support to families in need, adopting the basic principles of the Waldorf approach, have responsibilities such as adding parents to festivals and events ([www.whywaldorfworks.org](http://www.whywaldorfworks.org), 2015). Waldorf teachers educate parents on the goals and principles of the Waldorf approach to the goals they choose and set for their children. Teachers also find it useful to observe families and children in the home environment and often do so (Williams and Johnson, 2005).

#### **Conclusion**

Considering the Turkish education system, the effect of alternative education approaches on our education system is an undeniable fact. In addition, the institutions that provide education through alternative education approaches are increasing day by day. Especially in the field of preschool education, it is obvious that these developments are experienced rapidly. It is known that there are still approaches like Montessori, Waldorf, forest schools, which are not enough. Many of the institutions that exist at this point are still in the process of accreditation and yet do not feature a true Montessori or Waldorf school.

Considering the basic features of the Waldorf approach in this context, it is seen that there are some points parallel to the Turkish Education System and Turkish culture. Particularly, it can attract great interest in places where the Waldorf Approach is present, with its properties that are suitable for natural life philosophy which is becoming widespread nowadays. However, at this point, there is a spiritual dimension of the Waldorf approach. Anthroposophy, which is the basis of the philosophy of the Waldorf approach, does not quite agree with the culture of inroads common in our country. For this reason, schools that implement this approach are more likely to stretch this dimension of the philosophy. Otherwise, a certain resistance and prejudice may be encountered by people. In addition, Rudolf Steiner advocates a free educational environment in which every child can develop their own potential. However, most outcomes for children in early childhood classes ignore the individual characteristics of children in Turkish educational system. When planning activities, the teacher ignores these characteristics, skills and personalities of children. Teachers use generally pre-prepared plans to apply them to the class. However, these plans do not appropriate the developmental characteristics of some children. For this reason, the intended objectives have not been achieved. Freedom, which is an expression in the papers written in the Turkish education system, cannot show itself in practice. It is difficult to talk about the concept of freedom in an educational system where teachers are



often directed by children. It can be said that child-centered programs are shown in the curriculum documents, but the teacher-centered approach is dominant in practice. For this reason, schools that implement the Waldorf approach need to be careful in choosing teachers and pay attention to their teachers have engaged(?) Waldorf philosophy. In the Waldorf approach nature is seen as a third teacher. However, it is seen that the concept of nature is not given enough importance in the Turkish education system. Especially in kindergarten, garden time is frequently used in the Waldorf approach. However, when we look at the practices in the Turkish education system, it seems that children are very limited and inadequate at the time they spend in the garden.

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# Highlighting the Consequences of Ignoring Children's Emotions in Schools: Case of 30 Pupils in Three Algerian Primary Schools

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## Abstract

This research paper probes the potential effects that disregarding academic emotions in the educational milieu might have on primary school pupils in Algeria. It mainly focuses on revealing various emotions children have in and toward their schools. To investigate this issue, we have used relevant theories and approaches to underpin the present study, notably Reinhard Pekrun's works (2006, 2000, 2010, 201, and 2017) and Goleman's emotional intelligence theory (1995). Correspondingly, we opted for observation and focus group discussions as the main research instruments to examine the selected pupils' emotions toward school and teachers. More specifically, we selected three different primary schools in Oran and Mostaganem cities (Algeria) to observe and interrogate 30 pupils. Our participants' age varied from six to eleven years old. The findings showed that most children have negative feelings inside the educational milieu. Also, the participants revealed that they hate school, for they consider themselves imprisoned in this milieu, and most of them do not like their teachers for various reasons. As a matter of fact, the present research accentuates that positivizing the educational milieu at the primary level must be a priority for teachers, parents and the ministry of education in Algeria. Our study also emphasizes the significance of fostering children's emotional intelligence

**Keywords:** Academic Emotions, Children, Algerian Primary Schools, Emotional Intelligence

## Introduction

Understanding human emotions have long been the target of psychologists, anthropologists, and other scientists. A myriad of studies, in various fields, argue that the ability to understand feelings and motives is an essential skill. In western Academia, issues and topics related to emotions are given much importance in different disciplines. As one of the most revolutionary researchers in this field, Daniel Goleman (1995) defines Emotional Intelligence (EI) as the ability to understand emotions and help realize how one's emotions affect the people around, including self perception and the perception of others. According to Goleman (1995), EI allows the self to manage individuals' relationships more effectively when understanding others' feelings. In this respect, emotional intelligence or emotional literacy has been defined as recognizing, appraising, expressing, understanding, and regulating emotions (Mayer & Salovey, 2003).

A growing interest in investigating the relationship between learning and emotions has also been marked in various fields, notably educational psychology and child psychology. Nevertheless, in developing and underdeveloped countries, where the educational systems are still weak, little attention is given to understanding the relationship between learning and emotions and how the latter affects the former. In fact, schools are an essential context for children's social and emotional development, and one should relate this fact to what Goleman (1995) has theorized in

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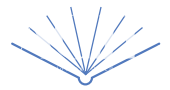
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emotional intelligence. Daniel Goleman emphasizes that emotional intelligence begins to develop in the earliest years of a young child's life. Moreover, in classrooms and other school settings, children and adolescents require skills such as managing negative emotions: being calm and focused, following directions, and navigating relationships with peers and adults (Jones and Boffard, 2012), and this is referred to as 'emotional literacy'; for instance, when a child knows how to manage his/her feelings well, she/he is said to be emotionally literate. Children with good emotional literacy recognize and respond well to other people's feelings. However, and despite its imperativeness, this type of literacy is completely ignored in the educational system in Algeria, where all emphasis is put on other types of literacy skills, chiefly reading, writing, and digital literacy. Although issues related to emotions and their roles in learning are tackled by postgraduates and researchers in teaching foreign languages or psychology departments, it is rare, almost impossible, to find researches that investigate this subject matter edited and published in Arabic, the language of most readers in Algeria.

Indeed, it is of paramount importance to understand that those emotions, during learning, shape young people's feelings toward education. It is often likely to find that children who have positive experiences are the ones who would enjoy their schooling and develop a love of learning. In contrast, children who have negative feelings toward the school, the teacher, or peers often hate education and the learning experience. The negative emotions that learners may have inside the school or the classroom are destructive for the learners themselves and the whole environment. Education studies have revealed that emotions such as boredom, fear, anxiety, and anger negatively impact learning gains and engagement.

In the Algerian educational context, learners' emotions are not given any consideration. In fact, the educational system in Algeria is often described as weak and failing, although a succession of reforms has been brought to textbooks and teaching approaches since the independence (1962). One can notice that a number of controversial issues were at the center of these reforms: national identity, meeting globalization demands, and covering the needs of an ever-growing population. Nonetheless, no special attention was/is given to emotionalizing the educational process and positivizing the educational milieu. Algerian education experts focus more on the logistics of the educational process, its approaches, and textbooks' content. It is uncommon to find debates on and about learners' emotions, teachers' emotional health, how to improve the emotional intelligence of pupils, or related issues. On another hand, few types of research investigate the role of emotions in Algerian schools or learners' emotional intelligence.

Tracing the history of reforms brought to the Algerian education system since 1962, we discern that policymakers and educational specialists were often concerned with equipping Algerian schools with suitable materials, new technologies, and more teachers. However, no attention was given to the issue of emotions and feelings in the educational setting, although the latter represents nowadays, in developed countries, a key aspect of successful teaching and learning experiences. Academic emotions, indeed, have an indispensable role in the life of students outside the school because the school is an environment where children spend long hours interacting with their mates, being praised or criticized by their teachers, being bullied, challenging teachers, etc. Therefore, the school is a milieu charged with positive or negative emotions. (Saunders, 2012)

In fact, while reading through the five years syllabi of Algerian primary education and deconstructing the programs' objectives, the researchers have detected that no consideration was given to understanding and positivizing children's emotions at school to improve learners' emotional intelligence and foster the emotional relationship between the learner and the school environment. Therefore, the present research highlights the importance of considering the children's emotions in Algerian schools. Its ultimate objective is to explore the significant impact that ignoring the learner's emotions in the classroom has on the educational process at the primary level, where learners are too young to recognize and manage their own emotions, and they are in the throes of developing their emotional intelligence.

This investigation is, indeed, of paramount importance as it puts forward that one major reason for the deterioration in Algerian schools is their emotionlessness. By presenting a few instances of young primary school learners who represent the majority of pupils in this country since what will be presented is phenomenal in most Algerian schools, we could assert that pupils' emotions in the school are completely ignored unrecognized by the kids and their teachers. Thus, the significance of this research lies in its novelty in the Algerian context, its cruciality in making education in Algeria successful, and turning the Algerian school into a milieu where young learners love to spend long hours.

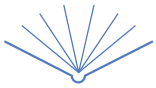
## Literature Review

### *Emotions in Education and Academic Emotions*

The school and the classroom are full of emotions, and there must be a pertinent understanding of these emotions as they differ from those found outside the educational milieu. It has become necessary to comprehend that emotions expressed and felt inside the classroom or the school affect the learners' learning and the teachers' teaching. Trezise (2017) argued that classrooms are emotional settings and that students' emotional experiences can impact their ability to learn, engagement in school, and career choices. However, education research often ignores or neutralizes emotions.

It has become essential that researchers tackle different issues related to emotions in the educational milieu from different perspectives. As a result, an increasing number of research seeking to understand the significance of other emotional states in academic settings has marked the last two decades. Researchers (Pekrun, 2006; Furrer & Skinner, 2003; Linnenbrink et al., 2010; Ulmanen et al., 2014) are now theorizing on the relationship between emotions, cognition, and learning and the relationship between neural activity and emotional states while learning. Linnenbrink-Garcia and Pekrun (2011, p. 3) noted, "research on emotions is still in its early infancy." Nevertheless, more recently, there has been increasing recognition of the crucial role of emotions in educational settings in international academia. A considerable number of new researches have been published in the last two decades to draw attention to the pivotal role emotions play in educational settings. Pekrun's works on achievement and emotions were pioneering research in this field. A brief overview of this theory will be presented in the following section.

Emotions in the school: academic, yet socially-embedded  
 Besides acquiring knowledge and cognitive skills during formal education, learners develop pleasant and unpleasant emotions related to learning and achievement. However, despite the ubiquity of emotions in the classroom, research on



emotions in educational contexts has been slow to emerge. In fact, research on emotions and their role in achievement and performance is still at its embryonic stage since little was investigated in the field of emotions in education, and yet so far, research has shown that young learners' emotions are linked to their academic achievement. More specifically, positive emotions such as enjoyment of learning show positive links with achievement, and negative emotions such as test anxiety show negative links (Pekrun, 2006). Reinhard Pekrun's work is one of the significant studies investigating how students' emotions impact their learning, how success and failure at learning influence the development of their emotions, and how other variables cause the association.

According to Pekrun's theory of control-value, emotions reflect the temporary affective state when performing a learning-related task in a school, college, or university setting. Learning-related emotions appear in different academic backgrounds, such as attending class, studying, and taking exams. Therefore, emotions can vary across these settings. Using a three-dimensional taxonomy (Pekrun, 2006), learning-related emotions can be differentiated by valence, object focus, and activation. In terms of valence, positive emotions (e.g., enjoyment) are distinguished from negative emotions (e.g., anxiety, boredom). These emotions are academic, and some of them are socially embedded. In fact, academic emotions refer to a set of emotions that are experienced in pedagogical settings while engaging in pedagogical activities, such as teaching, studying, and learning.

Moreover, Pekrun (2009) assumed that emotions influence students' cognitive performance by affecting their cognitive resources, motivational processes, and ways of solving problems. Also, positive emotions may, for example, promote the enjoyment of learning that further increases effort and odds for academic success (Pekrun et al., 2002). On the other hand, increased anxiety caused by competition for good grades may also result from positive peer interactions, where good academic performance is socially expected and valued (Pekrun et al., 2017).

The present research is related to what Pekrun and other researchers have theorized regarding education or academic emotions. However, our investigation is different from the previous research in many ways. First, the context is culturally different; Algeria as an Arab, Muslim, and African country represents a divergent field of research when dealing with the issue of emotionalizing schools. Algeria is a relatively conservative country where traditions and religion partially control people's social and individual behavior. Also, most Algerian families do not give their children's emotions importance, mainly when they start school. What they care about the most is the grades of their children, i.e., their cognitive development rather than their emotions and their emotional development. The other variable that would make the present investigation unique is the specificity of the educational system in this country. To explain further, the following sections will present a concise description of the educational system in Algeria.

#### *A Brief Description of The Algerian Educational System*

The Algerian educational system is structured into primary, middle, secondary and university levels. Algerian education is still grounded in the French fact-acquisition orientation, and teaching is almost exclusively in the lecture and memorization mode (See <https://www.aboutalgeria.com/2017/12/the-algerian-education-system.html/> accessed on the 10th of August 2020). Primary schools operate on a three-cycle system. The curriculum in the first

through the third year of primary education (basic cycle) for children 6 to 9 years of age provides manual work with education and training tools to develop motor skills and help children understand and adapt to the environment. The second, or "awakening" cycle, is designed for 9- to 11-year-olds and occurs in the fourth through fifth year of education. The educational focus is on reinforcing skills acquired during the first stage plus continued learning in language, mathematics, environment, and religious and national studies. French as a first foreign language is offered. Pupils start learning this foreign language in the third year. The third, or training, cycle (also called the middle school) comprises the sixth through the ninth year of education for children 11- to 15-years-old. The curriculum is dedicated to studying linguistic, social, cultural, religious, and scientific education, as well as mathematics, physics, and various sciences of applied technology. English as a second foreign language is offered and taught from first-year middle school to university. At the end of the third stage, students sit for a final exam in the fourth year (foundation education certificate, or B.E.M).

In this brief overview of Algerian education, one may notice that it does not give any importance to emotional skills. No subject develops these skills. For instance, in primary school, from their first year in school, young pupils from six years to 10 or 11 years old are exposed to complicated notions in mathematics, Arabic language, religious education, and other subjects. The long hours –three hours in the morning and one and a half to two hours and a half in the afternoon – often enervate the young kids and make them hate being in school. They have a break of only ten minutes in the morning and ten minutes in the afternoon per day. During this break, the teacher and/or the headmaster control the behavior of the pupils in the courtyard. The break of ten or twenty minutes is often filled with shouting, yelling, hit and run on the part of children, and fighting between the pupils, mainly in public schools. More explanations, descriptions and interpretations of this situation will be given in the following sections.

#### **Method**

##### *Research Design*

The present research is qualitative as the researchers chose not to analyze the collected data numerically. In fact, it may be irrelevant to analyze the participants' answers statistically when the ultimate objective is not to count answers but rather to deconstruct them. Also, this study is exploratory. Its major aim was to unveil how emotions are neglected in Algerian primary schools and relate the fact of ignoring learners' emotions to failure and achievement in the educational milieu. In fact, exploratory research is used to examine a problem that is not clearly defined or un-explored previously, as is the case with the issue under study.

##### *Participants and Setting*

Our participants were 30 children who studied in three Algerian primary schools. Their age varies between 6 and 11 years. The three selected primary schools were all public. The researchers did not choose private schools because most educational institutions in Algeria are public. We assume that pupils, teachers, and the administration are different in private schools. It is important to highlight that most people who go to private schools in Algeria belong to a social and economic class that represents a minority in the society; only rich people or people with high social status can go to private schools because of the expensive fees these schools require.



Moreover, the majority of people in this country go to public schools, and this is what makes the behaviors and phenomena investigated in these schools correspond to what is shared among the majority of Algerian people; by this, we mean that the common social behavior or habitus (Jenkins, 1992) is what is found in public schools as it is a representation of what is general among the majority of people. The three schools are situated in Oran and Mostaganem in the west of Algeria, two schools in Oran and one in Mostaganem. We would have selected schools from rural areas, too; however, we assert that choosing schools from smaller towns in Oran/Mostaganem or other cities of Algeria would represent another variable that may change the results of this investigation. Moreover, we found it quite challenging since people in rural areas are not cooperative enough regarding emotions, sentiments, and recording the kids in schools.

**Research Tools**

In this exploratory study, we used two research tools. The first tool was an observation of the kids while going out of their schools for one week. The second tool was focus group discussions (FGD) with thirty primary school learners. Focus groups are used to/ collect data in participatory research, especially when involving young people (Bagnoli and Clark, 2010). Focus groups have become a popular research tool in social sciences because they allow participants to tell their own reflections, express their opinions, and even draw pictures without adhering to a strict sequence of questions. Many researchers assume that this method is often suitable for collecting data from children, youths, and parents for this and other reasons. However, the use of focus groups in social research is relatively new and was first understood as a utility method in the preparatory phase of quantitative studies or to foster the interpretation of qualitative data (see Hoppe et al., 1995, p.102). Today, focus groups are an integral part of the methodological canon. They are well used to take advantage of group dynamics and tensions between the participants and gain more information than single interviews. For its importance, when dealing with children, researchers must perceive some other factors that need to be considered in addition to the traditional issues related to conducting focus groups mainly because of cognitive, linguistic, and psychological differences between children and adults. Therefore, we had to be careful while creating the focus groups with our participants who were not familiar with interviews and talking about their emotions.

**Data Analysis**

This research took the researchers three weeks of investigation. The researchers spent the first week observing the pupils of the three selected schools going out of their institutions at 11:15 am and at 3:30 pm during the month of February 2021. The observation inside the school or the classroom was impossible. In fact, it is not allowed to enter schools, interview teachers or administration staff, talk to pupils and make observations inside any school without the authorization of the directorate of education. Due to administrative bureaucracy, the researchers could not get this permission. As a matter of fact, the methodology of this research was modified accordingly, and only one choice for the stage of observation was possible; this was standing at the entrance of the three selected schools to watch the children going out of the school to analyze their behavior.

While observing the children leaving the school, the researchers took notes to describe the emotional behavior of the kids when leaving their schools. As mentioned above, observing the children inside the school and the classroom

was missing in this stage; this is a significant limitation of the present research; however, with focus group discussions, we expected to have the necessary data about the children's emotions inside their classrooms through their answers to our questions.

**Observing The Children Leaving The School**

This type of observational method used in this investigation is called "anecdotal records."The latter involves factual accounts of events that have taken place, and they represent detailed narrative descriptions of an incident involving one or several children. They are used to document unique behaviors and skills of a child or a small group of children; anecdotal records may be written as the behavior occurs or at a later time. The following is the sample of the anecdotal records we used:

<b>ANECDOTAL RECORD</b>	
<b>Child's name:</b>	<b>Age:</b>
<b>Observer's name</b>	
<b>Date:</b>	<b>Time:</b>
<b>Setting (place, people involved, atmosphere, etc.):</b>	
<b>Conclusion:</b>	

We had five different anecdotal records during one week. In addition, the researchers had to write about unusual incidents while observing the children leaving their schools in the morning and the afternoon. It was challenging to cover the behaviors of all pupils as they were many. Yet, we tried to focus on masses of pupils rather than on a given pupil in isolation. The following is the conclusion of the different anecdotal records the researchers wrote:

**Anecdotal record 1**

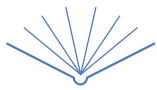
The first incident researcher 1 noted on the anecdotal records was a first-year grade girl leaving school crying. (1) The girl explained to her mother that the teacher shouted at her because she could not answer the question; she did not follow the teacher because she was talking to her friend. So, the girl was crying hysterically. The mother was angry at her daughter's teacher. The girl seemed uncomfortable, annoyed, and sad. The girl told her mom that she did not want to come back to school again.

**Anecdotal record 2**

A second incident was a third-grade boy in another school: He spoke loudly with his friends. He was cursing his teacher and insulting her. The researcher understood from the boy's discussion with his friends that he was throwing papers at his friend during the French session. The teacher saw the kid doing this and immediately brought a short wooden baton and hit the kid on his right hand twice while threatening him in French; this was a common way among many primary school teachers to punish their pupils for a mistake or misbehavior. It is noteworthy to recall that beating pupils is strictly forbidden. The law that prohibits beating pupils has existed since 1991. However, many teachers still beat their pupils, mainly young learners, violently. The boy was angry, but he seemed to show strength and victory over his teacher. I knew later that this boy was very weak in French. This behavior of insulting teachers was expected mainly among boys in the third, fourth, and fifth grades.

**Anecdotal record 3**

A third incident occurred while researcher 2 was observing the kids of a third school. A fourth-grade epileptic girl fell on



the ground once she went out of school. The girl was yelling and crying while hitting her head on the floor. The researcher saw her teacher running toward her; she was frustrated and tried to stop her, but she did not know how to handle the situation. She called the headmaster immediately, and the latter came after a few minutes. There was no medical unit in this. After a short while, the girl calmed down, and her friends accompanied her to her house. Apparently, the teacher did not know that the girl was epileptic.

**Anecdotal record 4**

A fourth event took place on the third day of the observation period. Again, this incident was related to a teacher of French. Two male pupils described their teacher as harsh, unkind, wicked, and crazy. Researcher 2 could understand why the two kids were angry as they said they do not know French and the use of learning this language. It was clear that these two boys hated French because they hated their teacher, who was unkind to them.

**Anecdotal record 5**

A fifth incident was different from the previous ones. This time, fifth-grade pupils were going out of their school with their teacher. They were having a discussion full of affection and positive emotions. This scene reflected the pupils' emotionally solid relationship with their teacher, and researcher 2 knew that this teacher was the best in this school and that her pupils were the best. This lady was the only teacher in her school to have such a reputation.

**Analysis of The Anecdotal Records**

The analysis of the five written records was through three steps: making inferences, summarizing and assessing. The inferences made by the researchers aimed to answer the following two questions: what kind of emotions do the recorded incidents carry? And how can we explain these emotions? After making inferences, a summary of each incident was displayed on the chart to be presented later in this section. The last part of the records' analysis concerns the assessment of every select child's behavior. The latter was tentative since the researchers are educators and not child psychologists. In the following paragraphs, we will present the three charts that display the inferences, the summaries and the assessment of the five anecdotal records.

**Table 1. The inferences made from each record**

The incident	The inference made
The first-grade girl leaving the school crying hysterically	The six-year old girl would have negative emotions toward her teacher and learning
The third-grade boy making fun of his teacher of French with his friends	The nine-year old boy would have negative emotions toward his teacher of French and learning this foreign language
The fourth-grade epileptic girl having an epileptic seizure	The ten-year old girl would feel embarrassed and traumatized. She would probably hate going to school.
Two male pupils describing their teacher of French as harsh, unkind, wicked	The two boys would hate French and teachers of French for years ahead. Learning this foreign language would be difficult for them too.
The fifth-grade pupils leaving the school happily accompanied by their teacher	These pupils do have positive emotions inside the classroom, with their teacher and inside the school. They would love the learning experience.
Participant	2

**Table 2. The summary of each record**

The incident	The summary
The first-grade girl leaving the school crying hysterically	Young pupils of first grade get easily emotional
The third-grade boy making fun of his teacher of French with his friends	Male pupils make fun of their teacher of French because they do not understand this foreign language
The fourth-grade epileptic girl having an epileptic seizure	Neither the teacher nor the administrative staff is able to manage situations where they have pupils with disabilities or psychological disorders
Two male pupils describing their teacher of French as harsh, unkind, wicked	The teacher of French is disliked and hated by her male pupils
The fifth-grade pupils leaving the school happily accompanied by their teacher	The pupils of the fifth grade do love their teacher and feel comfortable when she is around.

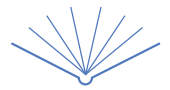
**Table 3. Tentative assessments**

The incident	The assessment
The first-grade girl leaving the school crying hysterically	The first year of schooling is decisive regarding the academic emotions of young pupils
The third-grade boy making fun of his teacher of French with his friends	Pupils' level in French as a first foreign is related to their emotions toward their teacher. The latter are often negative.
The fourth-grade epileptic girl having an epileptic seizure	Pupils with disorders and disabilities are not given any special care by teachers and administrative staff because the latter are not qualified to deal with such cases.
Two male pupils describing their teacher of French as harsh, unkind, wicked	Learning French as a first foreign language is often hated and disliked by pupils because the teachers of French at the primary level are not qualified to deal with beginners.
The fifth-grade pupils leaving the school happily accompanied by their teacher	Pupils do have positive emotions with a caring teacher. The learning experience, therefore, becomes amusing and interesting.

Through the analysis of the above charts, the researchers confirmed that negative emotions in the educational milieu are often related to the teacher. Pupils would have negative emotions with a teacher they hate, and they would love learning and have positive emotions if their teacher is caring, cool and open-minded. On another hand, foreign language learning, like French learning, is also often related to the amount of either negative or positive emotions pupils do have in the classroom with their teacher. The latter is often negative because French teachers do not consider the weaknesses of their pupils, and they take for granted that their learners should understand this foreign language. In what follows, we will present the second part of the data analysis that concerns the focus group discussions. The last section will be devoted to the final results the researchers have reached through the analysis of both data: anecdotal records and FGD's data.

**Analysis of Focus Groups Discussions**

In the second phase of this investigation, the researchers organized three FGDs with 30 selected children: 10 pupils in each group. The focus group discussions were the most crucial tool the researchers used so as to create a safe and comfortable environment for children to talk freely and openly about their feelings. In addition, they were estimated to allow the kids to tell their own stories. The discussions



ran in Algerian Arabic, the participants' mother tongue. Using the mother tongue with children in focus groups is the most effective way to get valid data, particularly if the aim is to uncover facts about how they feel in the school. Before organizing these focus groups, we had to get the permission of these children's parents. Indeed, the parents were cooperative, and they approved the issue's importance under investigation. All parents argued that their children's emotions inside the school and the classroom play a decisive role in the evolution of their kids academically and emotionally.

In fact, the focus group should be experienced as free-flowing and relatively unstructured, mainly with children. The researchers' different discussions with the young participants took place ten minutes before they entered the school at 1 pm. We organized two focus groups of ten participants in Oran and one focus group of ten children in Mostaganem. The groups were heterogeneous as there were boys and girls from the five grades. The two moderators, who are the researchers themselves, had to follow a pre-planned script so that discussions would be precise, short, and not boring. Rosanna Breen (2006) explained that the focus-group moderator should spend a large portion of the discussion time probing the participants' experiences, asking them to share and compare experiences, and discussing the extent to which they agree or disagree with each other (p. 468). So, after each moderator presented herself to the children of each focus group, she explained to them the topic of the discussion. The researchers had to simplify the issue of emotions and academic emotions so that the pupils would understand well the objective of our conversations. For the six 1st grade pupils we interviewed, it was not easy to have clear answers as they were too young to understand our questions, yet they expressed many ideas related to their emotions when they were inside the classroom. In what follows, we present the ten questions we asked the kids and how they responded to them. Though short and concise, these questions provoked our young participants to exteriorize their emotions towards school, teachers, learning, and other issues they could articulate like older people. It was surprising but expressive at the same time. The discussions with children were in Algerian Arabic to remind the reader because it is the participants' mother tongue. It was impossible to interview the participants in English as it is a language they do not master.

Question 1: Are you happy now that you are entering your school?

Typical answers: Most pupils said they were happy to enter school not because they loved learning, their teacher, or the classroom, but because they loved to meet their friends, play in the courtyard, and spend funny moments with their friends. A few pupils said they were unhappy; most of them were boys. They said that they preferred staying at home playing video games or soccer. They also described the school as a jail.

Question 2: Do you prefer being in school or at home?

Typical answers: As expected, the majority of the participants said they prefer staying at home with their parents as they feel more comfortable and relaxed. School, they said, is a place of much work and many exercises. In addition, many participants said that their teachers shout a lot and are angry, unlike their moms.

Question3: Do you love your teachers? And does your feeling towards them affect your academic performance?

Typical answers: Answers to this question were diverse, but the common thing in the pupils' responses is that they love the teacher who is kind to them, who teaches them well, and who is tolerant of them. We noticed that boys were more critical of their teachers than girls. However, most girls in the two groups said they loved their teachers. Also, the kids seemed aware of the correlation between hating or loving one's teacher or subject and their academic performance.

Question 4: Does your teacher love you? And how did you know that?

Typical answers: We noticed that this answer has puzzled and confused most participants. Most of them could not find an answer to this question, and they said that they did not know. On the other hand, we could detect from the kids' reactions that most girls answered with a 'yes' but could not justify or tell the researchers how they knew that.

Question 5: Do you feel comfortable inside the classroom?

Typical answers: Many pupils said they felt comfortable in the classroom except when there was noise or when the teacher started shouting and punishing the whole class, or when there was much work and many tasks.

Question 6: Do you feel angry when the teacher yells at you?

Typical answers: All pupils said they felt angry and annoyed whenever the teacher yelled at them. Some of them said their teacher sometimes yelled at them for no reason. Some of them described their teachers as crazy because they shouted a lot.

Question 7: Do you feel proud and happy when the teacher praises you?

Most typical answers: All pupils said they feel proud of themselves and happy when their teacher praises them.

Question 8: Does a negative or positive comment from your teacher or mate affect your motivation?

Typical answers: There were diverse answers to this question; while some of the participants (most of whom were boys) said they do not care about what others think of them and say about them, others said that they care most about the teacher's comments.

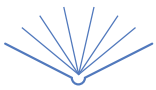
Question 9: How do you feel during the periods of tests and exams?

Typical answers: All participants, except for the first year grade pupils, said they feel anxious and stressed during the tests/ period exams at home and in the school because they spend long hours revising many lessons.

Question 10: Do you know what emotions and feelings are? And do you understand your emotions?

Typical answers: Most pupils were confused by this question. They started laughing and seemed embarrassed. It was clear that our participants were not familiar with such questions and topics.

After presenting a summary of the participants' answers, the next section is devoted to analysing both the anecdotal records and the pupils' responses to the questions of the focus group discussions.



## Results

Through the various incidents we noted while observing the children leaving school, and from the answers of the selected 30 children during the FGDs, we could identify a number of facts related to the emotional state of primary pupils in their schools. These facts represent a validation of the hypotheses set out earlier. In what follows, we present our analysis of the children's responses.

From the five anecdotal records the researchers wrote, we could comprehend that teachers completely ignore pupils' emotions. Through the first incident, one can notice that her teacher's behavior emotionally harmed the 1st-grade girl; the latter made the young girl think of not coming back to school again. The second and fourth incidents reflect two main dilemmas to be often found in primary schools: the first one is related to the negative feelings, more particularly frustration (Pekrun 2005), many young learners have towards French as a first foreign language and which makes them weak in this language, and the second issue is related to the behavior of most male pupils in the classroom, a behavior often described by teachers as rebellious and evil. The third incident, we noted during the observation period, mirrored the paralysis of the school and its personnel in dealing with psychologically and physically disordered pupils. The epileptic girl is one case among many others, like pupils with autism or attention-deficit hyperactivity disorder (ADHD) and other behavioral, emotional, and psychological illnesses or issues. We cannot blame teachers for not being able to manage such a situation because the ministry of education must recruit psychologists in every school and organize seminars or training days where these issues are tackled and debated.

The last incident, though exceptional what we noticed, reflects the extent to which a good teacher-pupils relationship can influence academic performance and learners' motivation (Pekrun 2014). The pupils were attached to their teacher and most of their emotions inside the school and the classroom were positive. There was a state of affection and comfort on both sides (teacher and pupils). It was no surprise to know that this class was the best in that school.

From the participants' responses during the FGDs, the researchers deduced that most children do not have positive emotions inside the school as they feel high pressure because of the overloaded program and the many activities they have in one day. Also, the emotionlessness of their teachers affects their motivation. Children prefer compassionate and kind teachers. The pupils' responses also revealed that positive comments from their teachers boost their motivation while negative comments demotivate them. The participants' answers unveiled the other fact, the pupils' inability to understand emotions; this may signify that most pupils cannot manage and control their emotions, which could be viewed as one reason behind the rising violence in the educational milieu.

## Discussion, Conclusions and Suggestions

Since pupils' emotions play a crucial role in the learning process (Pekrun, 2006, 2009 and 2017), this research addressed the consequences of ignoring students' emotions. In this paper, the researchers argued that this is one of the main issues that remain unnoticed by educational professionals in Algeria. This concluding section proposes a number of suggestions that should be taken into consideration by teachers, parents, and experts who write the syllabi for the five years of primary school. First, extensive research is needed to understand the

learners' emotional states in educational settings, how they interact with learning content, and the relationship between emotions, cognition, and learning. Then, field research proposes practical solutions and viable techniques. Also, positivizing the classroom is a crucial solution. Teachers must positivize their words and conversations: negative words like insults and verbal harassment should be avoided. Also, teachers should fill the classroom walls with pictures reflecting different emotions. Furthermore, teachers must create and use role-plays in various situations where emotional intelligence skills are developed. Other social and emotional activities such as taking turns taking charge could help kids develop emotionally and motivate them to love school and learning. (Pekrun, 2017)

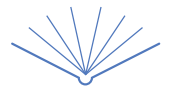
There are other considerations related to the classroom characteristics, notably the number of pupils per class that should not exceed 20. In addition, the structure and arrangement of the classroom should change from row seating to U-shaped as the latter encourages the pupils to interact more and feel they are all equal. Moreover, with this arrangement, the teacher is physically close to every pupil and can build a strong emotional relationship with all pupils. (Garret, 2008)

An important recommendation that we highlight at the end of this research is related to the program of what we call in Algeria "second generation books." The latter represents the reforms of the different curricula in basic education (2003/2004). However, when we access the website of the ministry of education (<https://www.education.gov.dz>) to read the objectives of these reforms, we find no single aim that refers to developing the emotional and social intelligence (EI, SI) of learners. Therefore, we suppose it is time for the ministry of education to review the curricula and their objectives to incorporate subjects and activities that enhance learners' EI and SI.

To conclude, this paper attempted to reveal that a major issue in the Algerian school is that it does not give importance to learners' emotions. The hundreds of studies done by researchers from other countries have encouraged us to introduce such a topic in our context to raise awareness regarding the gravity of ignoring young learners' emotions in schools. However, the present research's reliability and validity are shaped and limited by other independent variables and factors. These are the ones related to the socio-cultural specificity of each region in a country described as diverse and geographically big like Algeria. As already mentioned previously in this research, if we did the same investigation in private schools, the findings may have been different. Similarly, if we had done the same research with pupils from the south or East of Algeria, the findings would have also been different because the social context is different. Therefore, we highly recommend that similar research in other socio-cultural and regional contexts would add other dimensions to the present theorizations.

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# The Effectiveness of Inquiry Based Activities Based on Authentic Learning Approach on 5th Grade Students' Academic Achievement and Creative Problem Solving Skills

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## Abstract

Turkish Science Curriculum for secondary school students is based on an inquiry-based learning approach with an interdisciplinary perspective. Authentic learning; is an interdisciplinary, collaborative, learning method with authentic tasks, activities and assessments that requires high-level thinking skills, aiming to find solutions to real-world problems. The aim of this study was to investigate the effects of inquiry-based activities based on authentic learning approach on academic achievement and creative problem-solving skills of 5th grade students. The study group had 21 5th grade students in total, 7 of whom were girls and 14 were boys. The study group were students from a private school in Üsküdar, Istanbul Turkey in the 2018-2019 academic year. "The Propagation of Light" unit academic achievement test and the Creative Problem Solving Attribute Inventory were used as data collection tools. The data obtained in the study were analyzed using a statistical program. "Wilcoxon Signed Rank Test", which is one of the non-parametric tests, was used in the analysis of the academic achievement test. In the analysis of the Creative Problem Solving Attribute Inventory, "Dependent Groups t-test", which is one of the parametric tests, was used. In line with this analysis, it was concluded that the inquiry-based activities based on authentic learning approach affected students' academic achievement and creative problem-solving skills in a positive way. Suggestions were made based on the findings of the study.

**Keywords:** Authentic Learning, Creative Problem-Solving Skills, Inquiry-Based Learning, Science Teaching, Propagation of Light

## Introduction

From the moment we were born, the first learning environment was our home with our family. Until attending to the kindergarten, the first education is given within family and the individual has the role of an observer. S/he tries to learn by imitating what s/he observes. S/he is passionate and curious to learn. As s/he is aging, s/he evaluates the options by using her/his pre-knowledge obtained through the first experiences. In other words, they benefit from their past experiences. In line with these experiences, new experiences are lived, and new learnings take place. The events s/he has experienced, her/his reactions to the events s/he has experienced, the results of these reactions and the individual's own reactions to these results are all in a process. This whole process is the real life itself. The more we use a piece of information or the more we know how to use it in our future, the more value we will place on that information. We try to keep them in our minds more, to learn better.

If we give students problems that they may encounter in daily life, students will want to find solutions to these problems. Because they will know the possibility that this problem or a similar one may come across them in their future or professional lives. This is one of the reasons why students

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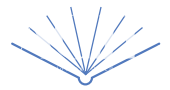
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are given real-life problems in authentic learning. Authentic learning is an interdisciplinary, collaborative learning method that aims to find solutions to real-world problems and has authentic tasks, activities and assessments that require high-level thinking skills.

While authentic learning provides learning, it prepares for the purposes and conditions that we will encounter in real life. It states that students should show complex abilities in the face of situations such as problem solving, collaboration, and research (Erten, 2020).

According to Herrington (2006), there are 9 components of an authentic learning environment. These; authentic contexts that communicate how knowledge will be used in real life, authentic activities, expert performances and modeling of the process, multiple perspectives and roles, collaborative accumulation of knowledge, reflection, articulation, coaching and structured support (educational scaffolding) and authentic evaluation. With all these components, we can state that the authentic learning environment has a design that reflects the complexity of real life, provides motivation for learning, and consists of real-world tasks. Thanks to the collaboration component, this learning environment, which allows many people with different views to work together while solving a common problem in the face of a problem, also allows students to talk about their work and provides support to other students and teachers in these environments.

Technology also has an important place in the selection and interaction of learning environment. The reason for this is that authentic learning enables technology to have an important place in our life outside the school life, in transferring the information we learn in the classroom environment within the school. Making a connection between these two environments allows teachers to create various opportunities while teaching with authentic learning (Erten, 2020). In authentic learning, the teacher should be in a supporting role towards the student and should improve and increase the student's performance (Renzulli, 1997).

According to Demirel (2019), Dewey also stated that education should be compatible with the realities of the world, enabling learning information that will be useful in daily life. Dewey, who advocated that the student should receive education actively, not passively, opposed the transfer of knowledge to the student with rote learning. Dewey's view of education is not independent of human nature. Human nature should be taken into consideration both during the teaching and learning of knowledge, and there should be an understanding of education that develops the innate characteristics of people and provides the appropriate skills. For this reason, it is thought that if students know that the information we learn in schools will guide us in the face of problems that may arise in daily life, their interest and relevance to the lessons will increase.

According to Lasry (2006), learning a concept or phenomenon is not an easy task, but a complex process that can last a lifetime. In science lessons, students encounter many concepts and phenomena and begin to know the world. Adapting the information given in science lessons to daily life is important for students to learn meaningfully. Developing students' scientific thinking, questioning, research and problem-solving skills is effective in enabling them to learn knowledge meaningfully (Varlı & Uluçınar Sağır, 2019). Inquiry based learning is an approach based on constructivist theory, focusing on the research process rather than product creation or problem solving, and developing high-level thinking and research skills (Lim, 2001; cited in Varlı & Uluçınar Sağır, 2019).

Shon (2001) states that teaching how to apply an authentic inquiry is one of the most permanent teaching methods. While this is being implemented, teachers want students to be included in their own inquiry, on one hand; and on the other hand, they consider the achievements of the course in the secondary details of the inquiry process (Shon, 2001). One of the important points in inquiry-based education is that student can comprehend why s/he learns the information while learning it. This situation can be better reinforced by an authentic problem that can be encountered by the student in daily life and concerns the subject to be learned. In order for the student to solve this problem, it is necessary to research, question and learn the subjects. In order not to receive the question of "Why do I need to know about this topic?", the teaching approach based on research and inquiry can be integrated with the daily life problems that form the basis of authentic learning. In this way, the student is provided to teach a subject like a scientist by researching, questioning, and experimenting, and how s/he should behave in the face of a problem, how s/he should develop solutions, and the importance of looking at real life problems from different perspectives are explained with authentic tasks and activities.

In this study, it was aimed to examine the effects of inquiry-based activities based on authentic learning approach on the academic achievement and creative problem-solving skills of 5th grade students. For this purpose, in the study "Is there any effect of inquiry-based activities based on authentic learning approach on the academic achievement and creative problem-solving skills of 5th grade students" question had been defined as problem statement.

In parallel to this problem statement the sub-problems of the study were defined as follow:

1. Do inquiry-based activities based on authentic learning approach have an effect on students' academic achievement?
2. Do inquiry-based activities based on authentic learning approach have an effect on students' creative problem-solving skills?

## Method

### Research Design

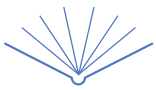
This research was based on the pre-experimental design in which one group pre-test/post-test design was used. In this design, the effect of the experimental procedure was tested with a study on a single group. Measurements of the dependent variable were obtained by using the same subjects and the same measurement tools as the pre-test before the application and the post-test after the application (Büyükoztürk et al., 2018).

### Study Group

The study group of this research, selected through a convenience sampling method, consisted of 21 5th grade students in a private school in Üsküdar, Istanbul in the 2018-2019 academic year. The study group had 7 girls and 14 boys. The application of the activities conducted by one of the researcher in 22 lesson hours, which was the recommended lesson period for the "Propagation of Light Unit" in the science curriculum.

### Data Collection Tools

In this study; The "Propagation of Light" unit Academic Achievement Test and Creative Problem Solving Attribute



Inventory (Lin, 2010, as cited in Baran-Bulut et al., 2018) were used as data collection tools.

The Academic Achievement Test was developed by the researchers considering the achievements in the curriculum. The test consisted of 24 questions at first, 11 of them prepared by the researchers, and 13 of them were taken from the 5th grade textbooks, workbooks, and test books (Science 5th Grade "Başarı-Yorum 1, Başarı-Yorum 2 ve Soru Bankası, 2018") published by the private school, where the application was conducted. The pilot application of the academic achievement test was applied to 94 6th grade students who were studying at a public school in Istanbul, who had studied the content of this subject in the science course previous year. Students were given one lesson hour to complete the test. Item analysis of the data was made for each question, and statistical program was used to find the difficulty and discrimination levels. According to the item analysis, the average difficulty of this test was 0.59. A separate item discrimination index was calculated for each item. As a result of these analyzes, the item discrimination power of 14 questions with a total value of 0.40 and above was found to be high. Items 1 and 14 with a value below 0.20 were excluded from the test due to their low item discrimination. As a result, an academic achievement test consisting of 22 questions was created. The mean item difficulty of this test was calculated as 0.59. Accordingly, removing items 1 and 14 did not change the value of the mean item difficulty. After the item analysis of the pilot application applied to 94 students, the reliability analysis of the 22-question achievement test was conducted, and the KR-20 value was found to be 0.746. Since this value was above 0.70, the reliability of the test was acceptable.

The "Creative Problem Solving Attribute Inventory" developed by Lin (2010) and adapted into Turkish by Baran-Bulut et al. (2018) was used as the other data collection tool. The original inventory was a 5-point Likert-type scale consisting of 49 items and 5 factors. These factors are convergent thinking, divergent thinking, motivation, environment, general knowledge and skills. With the analyzes made by Lin (2010), the inventory was reduced from 49 items to 40 items (Lin, 2010, as cited in Baran-Bulut et al., 2018). The Cronbach Alpha coefficient of the 40-item model was calculated separately for each factor by Baran-Bulut et al. (2018). According to the analyzes of the researchers, the Cronbach Alpha internal consistency coefficient was respectively; 0.78 for convergent thinking, 0.79 for divergent thinking, 0.73 for motivation, 0.88 for environment, and 0.77 for general knowledge and skills. In this research the Cronbach Alpha coefficient of the creative problem-solving skills attribute inventory was calculated, and for the pre-test it was found as 0.933. The Cronbach Alpha coefficient of the post-test was found as 0.951. Because these values range between 0.80 and 1.00, it was determined that the pre- and post-test scores of this inventory were highly reliable.

#### *Application Process*

The application was made in the fall term of the 2018-2019 academic year and took 22 lesson hours in total. At the beginning of the study The Academic Achievement Test and The Creative Problem Solving Attribute Inventory were given to the students as pre-tests. After the pre-test processed, inquiry-based activities based on authentic learning approach were conducted with the students. After the end of the activities the Academic Achievement Test and the Creative Problem Solving Attribute Inventory were given to the students as post-tests.

The application was carried out for 5,5 weeks, 4 lesson hours per week. At the beginning of each activity, the questions had been asked to direct the interest and curiosity of the students to the lesson, or videos had been played, authentic problem scenarios presented. Additional research questions given to the students' to make them understand the scenarios. The power point presentations used to show the content. Authentic problems displayed on the smart board during the lessons. This provided convenience to the students in case they forgot the authentic problem or during their research in the lesson they could look back at the problem. The authentic problems and additional research questions were given in written to the students to keep in their portfolios. As a result of the authentic tasks given to them in these activities, the students designed four products in total. Some web 2 technologic tools were also used during the application. At each authentic product creation stage, the class was divided into four groups. The groups were called as the first, the second, the third and the fourth. The students were asked to do research while solving authentic problems. They did their researches as: the first group; from the information sources on the internet, the second group; from newspapers and scientific journals, the third group were asked to go to libraries and collect information from books and encyclopedias, and the fourth group from adults whom they thought might had information on the subject. In each activity, group members changed their groups, so that each student was given different tasks. At the end of the study, the students were included in different research groups as much as possible.

While the teacher was guiding the students as a guide throughout the study, the students made an effort to solve the given real-life problem. In the given problem scenario, hints are given in the scenario in order to reach the desired product. Thanks to these tips, the student determined which subjects s/he would do research on with the guidance of her/his teacher, reached a solution and designed this solution by making a prototype with a product s/he created herself/himself. Finally, the students communicated actively by sharing the information they learned and the design they created with their own solution with their friends. The students were given the opportunity to present their products in the last week's exhibition called "Authentic Festival".

#### *Sample activity*

Activity name: Amusement Park Problem The name of the first authentic activity implemented in the study was the "Amusement Park Problem". It took six lesson hours to implement this activity. The primary purpose of this activity was to enable students to learn that light follows a linear path in every direction, and to learn the subject by researching and questioning, along with the real life problem given to them. Since it was aimed to find the connection of authentic activities with the real world, the real life problem was presented to the students through a light maze that they will design in an empty space in an amusement park.

The real life problem: "While planning residential areas in a newly opened amusement park, after the vehicles such as bumper cars, carousels, gondolas, and ferris wheels were placed, it was noticed that there was an empty space in a small corner of the land. The builders of the amusement park stated that they wanted to design this area as a labyrinth. But in the labyrinth, little kids need a solution so they don't get lost. I wonder how the builders of the amusement park, who placed flat mirrors in certain corners of the maze, found a solution? If it were you, what solution would you think of? Design your own maze and indicate your solution."



Before presenting the authentic problem to the students, the amusement park photos were shown with the presentation prepared in advance in order to attract the attention of the students to the lesson, and they were asked whether they had been in the amusement park before. After attracting the attention of the students to the subject, the real life problem was presented to the students with a power point presentation. The students were asked about possible solutions for this problem. Before solving the real life problem, a second topic was mentioned so the students with they could better perceive the achievements and conduct research. Students were asked to do research on what the periscope is, where it is used and how it's working principles are.

Afterwards, the students designed a simple periscope with the materials they chose and understood the rules for the propagation of light. The reason why students are asked to do research and comprehend these rules themselves was to adopt this working style, which they would apply in future authentic activities, that was, to enable them to learn by researching and questioning at the stage of solving the real life problem given to them, and to get them accustomed to the necessity of putting what they have learned into practice using trial and error methods. The additional research question was "What is a periscope, what is its mechanism of use?" given to the students. A solution was sought for the "Periscope Design" sub-problem in the first three lessons, and then the "Let's Paint" activity sheet was used. During the "Periscope Design", the students were divided into groups and did their research in teams and created their products. While learning the information, the students did researches from various sources and reached the results.

First, the students examined whether the information they had searched and gathered was true or not. In doing so, it was ensured that they criticize themselves and decide on the accuracy of the information impartially. In the learning process, students now understood how periscopes could be designed based on the laws of propagation of light, as they had knowledge about periscopes. Each working group made a periscope that they designed. After that, they were asked to draw a sun, mountains and forests on the activity sheet. They did the activity papers individually. While drawing the sun, it was examined whether they also drew light rays around it. The aim here was to make students think by questioning the word ray without telling them directly. In the remaining three lesson hours, the authentic problem was returned and solutions were sought and the main product was created. The real life problem that was given in the first lesson was shown to the class again with the power point presentation and the students were asked what could be done as a solution again.

The comparison made between the answers given by the students in the first lesson and the answers after gaining the information by their research and questioning. Students were divided into small study groups of different members and each group was asked to design their own maze. By dividing the students into small study groups, a collaborative environment was created in which they work as a team. After their research, the students had now mastered the achievements of the subject and designed their labyrinths as a group by finding their own solutions to the authentic task and using their creativity and imagination. Each group presented the labyrinths they designed as prototypes as a solution to the given real-life problem to their classmates. The research findings and products about periscopes were also shared with their classmates in the classroom environment, so that the groups who did researches in different ways

transferred their knowledge to each other. In this way, peer education was also carried out and incomplete information between the groups was prevented.

#### *Data Analysis*

All of the data collected from the students with the Academic Achievement Test and the Creative Problem Solving Attribute Inventory before and after the implementation as pre-test and post-tests were analysed by SPSS 22.0 statistical software program. In order to select the appropriate analysis methods, it was examined whether the data were normally distributed or not with Shapiro-wilk test and skewness and kurtosis analyses. According to test results the appropriate analyses techniques were chosen.

While evaluating the "Propagation of Light" Unit Academic Achievement Test, 1 point was given for each correct answer and 0 for each incorrect or empty answer. With this scoring, pre-test and post-test scores were calculated for each student, and the data obtained was analyzed and evaluated with the SPSS 22.0 package program. For the analyses of the Creative Problem Solving Attribute Inventory, which is a 5-point Likert type scale; scoring was made as "Never=1, Rarely=2, Sometimes=3, Often=4, and Always=5". In order to determine whether the data showed a normal distribution, the Shapiro-Wilk test was applied, and the results of the skewness and kurtosis coefficients were also examined. The "Propagation of Light" Unit Academic Achievement Test was analyzed with the "Wilcoxon Signed Rank Test", one of the non-parametric tests. The Creative Problem Solving Attribute Inventory was analyzed with the "Dependent (Associated) Groups t-Test", one of the parametric tests.

#### *Ethical Permission Information of the Study*

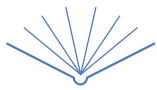
In this study, all the rules stated in the Committee on Publication Ethics (COPE) were followed.

#### **Results**

The first sub-problem of the research was expressed as: "Do inquiry-based activities based on authentic learning approach have an effect on students' academic achievement?" Before making a choice about whether to use parametric or non-parametric analysis methods in the analysis of the data, it was examined whether the data showed a normal distribution.

According to the results of the Shapiro-Wilk test, the p value was found as 0.154 in the academic achievement pre-test, and this meant that the data showed a normal distribution because the p value was statistically greater than 0.05 significance level. In the post-achievement test results, the p value was found as 0.034, and since this value was less than 0.05, it was seen that the data did not show a normal distribution.

According to table above while the lowest score calculated according to the percentile score obtained from the "Propagation of Light" Unit Academic Achievement pre-test was 37.5, the highest score was 79.1; the median of the test was 66.6 and the arithmetic mean was 62.8 (ss = 10.05). In the post-test analyses, the lowest score calculated according to the percentile score was 50, the highest score was 100 full points; the median of the test was 87.5 and the arithmetic mean was 85.6 (ss = 12.25). According to Kim (2013), when examining skewness and kurtosis values, the data obtained by dividing these values by their own standard deviations are between -1.96 and +1.96, and the data show a normal

**Table 1.** The Shapiro-Wilk Test Results of the Academic Achievement Pre-Test – Post Test Scores

Academic Achievement Test	Shapiro-Wilk	N	p
Pre-Test	0.932	21	0.154
Post Test	0.899	21	0.034

**Table 2.** Normality Analysis of the Academic Achievement Pre-Test – Post Test Scores

Academic Achievement Test	$\bar{x}$	ss	Median	Lowest Score	Highest Score	Skewness		Kurtosis	
						Statistics	Std. Deviation	Statistics	Std. Deviation
Pre-Test	62.8	10.05	66.6	37.5	79.1	-0.670	0.501	0.363	0.972
Post Test	85,6	12.25	87,5	50	100	-1.231	0.501	2.176	0.972

**Table 3.** The Wilcoxon Signed-Rank Test Results for the Comparison of the Pre-Test - Post Test Scores of the Academic Achievement Test

Academic Achievement Test Pre-Test – Post Test	N	Mean Ranking	Ranking Sum	Z	p
Negative Ranking <sup>a</sup>	0	0	0	-3.827	.00
Positive Ranking <sup>b</sup>	19	10	190		
Equal Ranking <sup>c</sup>	2				
Sum	21				

a. Post Test < Pre-Test b. Post Test > Pre-Test c. Post Test = Pre-Test

**Table 4.** The Shapiro-Wilk Test Results of the Creative Problem Solving Attribute Inventory Pre-Test – Post Test Scores

Creative Problem Solving Attribute Inventory	Shapiro-Wilk	N	p
Pre-Test	0.950	21	0.337
Post Test	0.918	21	0.080

**Table 5.** Normality Analysis of the Creative Problem Solving Attribute Inventory Pre-Test – Post Test Scores

Creative Problem Solving Attribute Inventory	$\bar{x}$	ss	Median	Skewness	Kurtosis	Skewness		Kurtosis	
						Statistics	Std. Deviation	Statistics	Std. Deviation
Pre-Test	4.02	0.55	4.10	-0.357	0.501	-0.877	0.972	0.363	0.972
Post Test	4.23	0.55	4.27	-0.642	0.501	-0.183	0.972	2.176	0.972

distribution. According to this information, for the result skewness value related to the achievement pre-test; -1.33, +0.37 for the kurtosis value, and the data presented a normal distribution. The result of the achievement post-test was for the skewness value; -2.45, 2.23 for the kurtosis value, and it was seen that the data did not show a normal distribution.

While the pre-test score showed a normal distribution, the post-test score did not show a normal distribution, so the evaluation was made with the Wilcoxon Signed-Rank Test, one of the non-parametric tests.

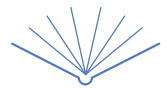
As a result of the analysis, since the p value ( $p = .00$ ) was less than 0.05, it was seen that there was a statistically significant difference in favor of the post-test between the pre-test score and the post-test score ( $Z = -3.827$ ;  $p < 0.05$ ).

The second sub-problem of the research was expressed as: "Do inquiry-based activities based on authentic learning approach have an effect on students' creative problem-solving skills?" Before making a choice about whether to use parametric or non-parametric analysis techniques in the analysis of the data, it was examined whether the data showed a normal distribution.

According to the results of the Shapiro-Wilk test, the p value was found as 0.337 in the creative problem solving skills attribute inventory pre-test and 0.080 in the post-test, and it was found that the data showed a normal distribution in both tests, since the p value was statistically greater than 0.05 significance level.

The arithmetic mean of the creative problem solving skills attribute inventory pre-test was 4.02 (ss = 0.55) and the median value was 4.10; the post-test arithmetic mean was found as 4.23 (ss = 0.55) and the median value was 4.27. The results obtained by dividing the skewness and kurtosis values by their own standard deviations are; for the skewness value, this value was found to be -0.71 in the creative problem solving skills attribute inventory pre-test and -1.28 in the post-test. Kurtosis values for the pre-test; -0.90 and -0.18 for the final test. According to these results, since the values found must be between -1.96 and +1.96 in order for the data to present a normal distribution, it was determined that the data exhibited a normal distribution in both the pre-test and post-test.

Since the pre-test and post-test scores showed a normal distribution, the Dependent Groups t-Test, one of the parametric tests, was used.



**Table 6.** The Dependent Groups *t*-Test Results for the Comparison of the Pre-Test Post-Test Scores of the Creative Problem Solving Attribute Inventory

Creative Problem Solving Attribute Inventory	N	$\bar{x}$	ss	t	p
Pre-Test	21	4.02	0.55	-2.617	0.017
Post Test	21	4.23	0.55		

According to the table above, the *p* value ( $p = 0.017$ ) was less than 0.05, it was seen that there was a statistically significant difference in favor of the post-test between the pre-test and the post-test scores of the Creative Problem Solving Attribute Inventory ( $t = -2.617; p < 0.05$ ).

### Discussion, Conclusion and Suggestions

In order to find an answer to the question of whether there was a significant difference between the pre-test and post-test scores of the "Propagation of Light" unit academic achievement test, the statistical analyses were conducted. It was found that the arithmetic mean of the post-test was statistically meaningfully higher than the arithmetic mean of the pre-test. This was interpreted as the application implemented in this study affected the academic achievement of the students positively.

When the relevant studies in the literature, which are based on authentic learning and authentic assessment and combine them with different teaching methods and techniques, are examined, it has been concluded that it is effective in increasing the academic achievement of students. Aynas (2018) and Gençođlan (2017) also integrated authentic learning with different teaching methods and techniques in their studies and mentioned that these studies had a positive effect on students' academic achievement. Karabulut (2018) conducted research on technology-assisted authentic learning activities with 7th grade students, 25 of whom were in the experimental group and 26 in the control group. reached to same conclusion. Dadlı (2017) carried out his work in the experimental group with authentic problem-based learning activities and in the control group with the traditional lecture method and applied the "Environmental Knowledge Test" to his students before and after the application in order to determine academic achievement level of the students. When the post-test scores of the groups were compared and analyzed, it was found that there was a statistically significant difference in favor of the experimental group. He explained that this situation increased the academic achievement of the experimental group students, who taught their lessons with authentic problem-based learning activities, in the "Human and Environmental Relationships" unit. As a result of Bruffy's (2012) doctoral dissertation to determine whether authentic tasks improve the academic performance and social interaction of special education students and other students, it has been found that social interaction increases with the use of authentic tasks. In this study, the academic achievement of the students was also examined, and the results of the authentic tasks related to academic performance were found acceptable.

In order to find an answer to the question of whether there was a significant difference between the pre-test and post-test scores of the Creative Problem Solving Attribute Inventory, the statistical analyses were conducted. It was found that the arithmetic mean of the post-test was statistically meaningfully higher than the arithmetic mean of the pre-test. This was interpreted as the application implemented in this study affected the creative problem solving skills of the students positively.

Studies in which authentic learning and problem-solving skills are examined in the related literature. Aynas (2018) concluded in his study that authentic learning had a positive effect on student's problem-solving skills. The students had positive emotions in the authentic learning process. He also stated that they developed positive behaviors towards the characteristics of authentic learning such as doing research, gathering information, looking from different perspectives, working in cooperation. In his study, Aydın-Aşk (2016) studied authentic task-oriented learning processes in the mathematics lesson and obtained the findings of students' problem-solving strategies from interviews with 6 students selected from the study group. From the opinions of the students, it was concluded that their motivation and self-confidence increased during the problem-solving stages. As a result of this situation, the researcher determined that he would help students in solving the problems they encounter in both daily life and school life. Dadlı (2017) conducted a study with 53 7th grade students, 26 of them in the experimental group and 27 of them in the control group; He taught the lesson with the traditional lecture method in the control group and with the authentic problem-based learning activities in the experimental group. The reflective thinking skills scale for problem solving was applied to determine the reflective thinking skills of the students, but no statistically significant difference was found between the reflective thinking skills scale pre-test and post-test scores. As this research and related studies support, it has been seen that inquiry-based activities based on authentic learning approach have a positive effect on increasing academic achievement and contribute positively to increasing students' problem-solving skills. Since authentic learning is a student-based approach, the teacher acts as a guide and the student needs information to solve the real-life problem given to him. Authentic learning, which enables the student to search the information herself/himself and thus learn by doing, plays a role in both increasing the academic achievement of the student and supporting the permanence of what s/he has learned. At the same time, there is an authentic problem taken from real life at the core of authentic learning. While students are learning, they also look for solutions to this authentic problem. For this reason, it is thought that authentic learning makes a positive contribution to the problem-solving process of students.

The biggest problem of today's people is that they cannot find a quick, sustainable and scientific solution to the problems they face. As the world becomes more global, individuals face more complex problems and their ability to find solutions to these problems has become much more important. Therefore, it is obvious that schools should be places that teach how to find solutions to real life problems, instead of being just places where information is transferred. While doing this, of course, curriculum goals should always be taken into consideration. Successful individuals of the future will only be individuals who can solve the problem they face in the shortest time possible by scientific methods. So, without wasting time, our children should experience scientific ways of solving real life problems in schools. It is recommended to conduct research on what can be done to adopt these methods and techniques in schools.



In this research, an approach that integrates the authentic learning approach covering the 5th Grade "Propagation of Light" and inquiry-based learning was used. Since authentic learning is a learning approach that requires a process, the number of authentic tasks and activities can be increased by extending the duration of the application. In the research, more activities can be done outside the classroom and web-based applications can be used in order to increase the interest and curiosity of the students in the activities. The usability of this application in different units of the Science course or in different courses and at different grade levels can be examined by other researchers.

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# Teaching Seventh Graders about the Digestive System Using Formative Assessment to Evaluate Comprehension Levels\*

Türkan ÇAKMAK<sup>a</sup>, Nermin BULUNUZ<sup>b</sup>

## Abstract

Biology lesson is one of the leading lessons that the students at all educational levels encounter with difficulty in grasping the subject matter and the teachers in teaching it. The reasons for this situation can be identified as the methods and techniques used in the education process being traditional, the fact that some biology course's subject matter concepts are abstract and the teachers have difficulties in concretizing while teaching them and the students having difficulties in grasping these abstract concepts. The purpose of this study was to investigate the effect of the formative assessment method on the conceptual understanding of 7th grade students about the digestive system in the "systems in our body" unit in the science course. Formative assessment probes were given to both the experimental and control groups as pre-test and post-test. Formative assessment strategies were developed and applied in an attempt to replace the existing misconceptions with scientific concepts. Hundred and five seventh grade students participated in the experimental study which included a pre-test/post-test control group design. The findings illustrated that there was a significant difference about the digestive system between the conceptual understanding levels of the experimental group students and the control group students.

**Keywords:** Formative Assessment Strategies, Conceptual Understanding, Formative Assessment Probes

## Introduction

In the relevant literature, the concept of formative assessment is defined as providing feedback and correction at every stage of the teaching-learning process (Bennett, 2011). The main objective of the formative assessment method is not to evaluate students through their grades. It aims, instead, to reshape the course to be taught through the provision of feedback on learning and teaching so that the students can accomplish their conceptual understanding (Black & William, 2009; Metin & Özmen, 2010). According to Keeley, Eberle, and Farrin, (2005), formative assessment is the assessment used for learning and teaching. In this assessment, the students' prior knowledge and alternative concepts enlighten the teacher about how the subject matter course will be taught, and the teacher, eventually, decides what kind of technique to use. Assessment is implemented continuously at the beginning of the course and throughout its teaching (Bulunuz & Bulunuz, 2013).

Formative assessment probes, forming the basis of the formative assessment method, which is also the subject of this study, are also utilized to identify the knowledge and information that the students have that is lacking in scientific content. These questions, which are briefly termed as "formative assessment probes" can be designed as both open-ended and multiple choice question. Therefore, the students not only reveal the misconception with the option they mark, but also illustrate the thought system with the open-ended answers they give. The formative assessment probe, which means "examining", "probing", "investigating" (TDK, 2005) in the English-Turkish dictionary, was effective in revealing the misconceptions when included in science education.

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However, formative assessment strategies have features that are similar to the argumentation method and differ in certain aspects. Argumentation basically requires coordinating theory with evidence and choosing between competing theories through critical evaluation (Köseoğlu & Tümay, 2011). In this respect, formative assessment strategies are similar to the argumentation method.

Argumentation can be expressed as a written or verbal process in which opinions are exchanged about the validity of a claim, using data, reasoning, support and rebuttals to persuade people, to get their claim accepted, and the other claim is criticized, discussed and reconsidered (Berland & Reiser, 2011; Driver, Newton & Osborne, 2000; Toulmin, 2000). Argumentation, which differs from formative evaluation strategies in this respect, includes an effort to prove or disprove the asserted claims. Students are aware of each other's ideas and discuss these ideas. The formative assessment strategy, on the other hand, includes the scoring part as an assessment strategy. Answers are evaluated with rubrics. In this method, other students do not see or discuss the answers given by the students to the open-ended questions. The student only writes answers to open-ended questions using their own cognitive processes. He gets a point based on his answers.

Together with the advancing technology, the new educational technologies have affected biology education as well. The use of gamification, virtual reality, digital games, concept cartoons has become widespread in biology lessons, which are seen as abstract, boring and difficult by students. For example, nowadays simulations are used especially in impractical, expensive or very dangerous laboratory work (Bajzek, Burnette & Brown; 2005). It has made it inevitable for the use of traditional methods and techniques to be reduced. It is simply because proceeding to teach the fast-advancing biology science to students with traditional methods and techniques means becoming distanced from innovation and investigative research (Canoğlu, 2004). As far as majority of the students are concerned, biology, one of the sub-branches of science, can only be learned through memorization (Ursavas, & Kesimal, 2020). Nevertheless, biology is very significant both in terms of being closely related to other branches of science such as chemistry and physics and being closely related to such the issues as global climate changes, sustainable development, and rapid depletion of energy resources in today's world (Börü, Öztürk, & Cavak, 2003).

When the secondary school biology subjects are examined, students who are initially introduced to the digestive systems in the fifth grade study these subjects by a certain model in order for them to be suitable for their cognitive levels (add citation) (Soeharto, Csapó, Sarimanah, Dewi, & Sabri, 2019). Nevertheless, in addition to the advantages of using a model, it also possesses some disadvantages such as misconceptions. The students who fail to acquire sufficient subject matter foundation in the fifth grade encounter these concepts again in the seventh grade and suffer from difficulties in constructing new knowledge with the misconceptions they have acquired (add citation). (Soeharto, and et all, 2019). In many studies done on the digestive system, it is clearly stated that the fact that the digestive system is defined as "a tube with two open ends" (Carvalho, Silva & Clement, 2003). (add citation), the stomach as "a balloon that has no connection with the mouth, without any entrance and exit" (Carvalho, Silva & Clement, 2003). (add citation), and the stomach as the most important organ of the digestive system all lead to some epistemological-based misconceptions (Bahar, 2001; Carvalho, Silva, & Clement, 2003; Yaman, Dervişoğlu & Soran, 2004).

In order to stop the misconceptions to emerge in students, teachers and pre-service teachers themselves should not have any misconceptions and teachers should know about possible misconceptions in their students in advance (Gökkurt Özdemir, Bayraktar & Yılmaz 2017). New strategies an important role to play in identifying and eliminating these misconceptions. Despite all this progression, the traditional methods are valued more considerably in our country than these strategies. When this particular situation is regarded from the point of view of teachers, the prejudiced point of view towards the new methods can be listed as a lack of self-confidence in using the new educational technologies and methods, and resistance to innovations. It is commonly known that when the teacher applies the method effectively in the lessons taught with formative assessment, which is one of the alternative assessment and evaluation approaches, student participation and motivation increase, it has a positive effect on conceptual understanding levels, and students learn the subject matter knowledge and information more permanently. As far as some previous research results are concerned, it was concluded from the observations, experiences, and the applications of formative assessment probes that the formative assessment approach had considerable potential to assist the conceptual learning in science courses (Bulunuz & Bulunuz, 2013).

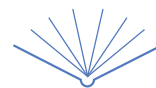
In the literature, it has been revealed that there are learning difficulties in biology, photosynthesis, osmosis-diffusion, cell divisions, ecology, evolution, digestive system, respiratory system, excretory system, nervous system and hormones, circulatory system, enzymes and genetics and there are misconceptions on these issues. There are studies that put (Pelaez, Boyd, Rojas, & Hoover, 2005; Sebitosi, 2007; Selvi & Yakaşan, 2004). Contrary to this situation, when the studies on the concepts in the seventh grade "systems in our body" unit in our country are examined, it is seen that very few studies have been carried out on the detection and elimination of misconceptions in the teaching of digestive systems. (Bahar, 2001; Carvalho, Silva, & Clement, 2003; Yaman, Dervişoğlu, & Soran, 2004). Please add here literature review on about the digestive system !!!

The purpose of the present study is to investigate the effect of formative assessment method on the conceptual understanding levels of 7th grade students about the digestive system in the "systems in our body" unit in the Science course. Therefore, the study has sought answers to the following research questions:

1. Is there a significant difference between the pre-tests of the experimental groups that have used the formative assessment method in teaching the concepts of the digestive system in the seventh grade "systems in our body" unit and the control groups that have not used this method?
2. Is there a significant difference between the post-tests of the experimental groups that have used the formative assessment method in teaching the concepts of the digestive system in the seventh grade "systems in our body" unit and the control groups that have not used this method?

## Method

In the present study, the "experimental design with pre-test-post-test control group", one of the quantitative research methods, was used. The designs that aim to identify the cause-effect relationships between variables are called experimental designs (Büyükoztürk, 2001). The experimental studies, conducted to identify the cause-effect relationships,



are those in which data to be observed are generated under the control of the researcher (Karasar, 2000).

### Data Analysis

In the present study, a rubric developed by Karataş (2003) was utilized to evaluate the formative assessment probes numerically, and the answers given by the students were evaluated based on this key. The analyses of the open-ended answers of the students were carried out by categorizing the answers of the students as a whole.

### Research Design

The formative assessment probes, which were used as a pre-test at the beginning of the semester, were given to all students as a post-test at the end of the semester, and the data collected from the formative assessment probes were analyzed and compared. For the experimental design used in the study, see Table 1.

**Table 1.** Experimental Design of the Study

Group	Pre-tests	Experimental Process	Post-tests
Experimental Group	Formative probe question 1 and 2	Formative Assessment strategies	Formative assessment probes

### Formative Assessment Strategies

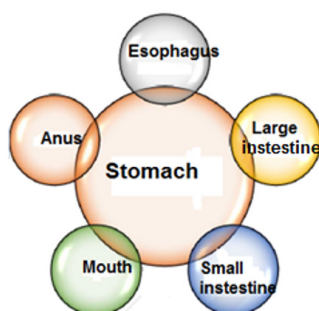
In this study four formative assessment strategies were used. The names of these strategies are: 1) First drawing-final drawing; 2) Where does the digestion of proteins begin? 3) Which ones pass into the blood without being digested? 4) Can you find the different sentence?

These formative assessment strategies were explained in the following section:

#### 1) First Drawing - Final Drawing

In this formative assessment strategy, students are initially asked to show, by drawing, the place of digestive system organs such as mouth, pharynx, esophagus, stomach, small intestine, large intestine and anus, and other structures and organs with which they are associated. It is aimed that the students are expected to achieve the following outcome; "The students are able to indicate the structures and organs that make up the digestive system on a model, plate and/or diagram".

**Figure 1.** First Drawing, Final Drawing



Before teaching the concept of digestive system, the following information was given to the students and also the researcher wanted the students to draw the digestive system in the box:

"You know, previously we learned the organs of the digestive system. Using the names of the digestive system organs given above, please draw our digestive system in the 1st box given below."

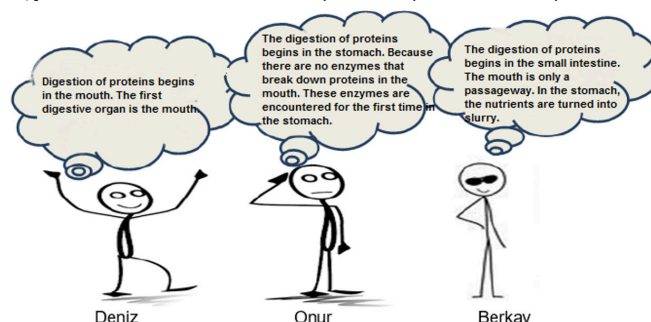
Then, the researcher taught the concept of digestive system by using the formative assessment techniques, shared the following information with her students, and wanted them to redraw their second drawing in the second box given:

"You know, previously we learned the digestive system. Within the framework of your new knowledge and information about this subject, please redraw our digestive system in the 2nd box given below. Please make sure that the names of the organs mentioned above are included in your drawing."

#### 2) Where Does the Digestion of Proteins Begin?

In this formative assessment strategy, it was attempted to teach the students that even though the journey of food in the digestive tract began in the mouth, the places of initiation of digestion were different. At the same time, students were aimed to achieve the outcome that the students could predict that the foods had to undergo some changes in order for them to be beneficial to the body and explain that the passage of digested foods from the intestines to the blood.

**Figure 2.** "Where Does the Digestion of Proteins Begin?"

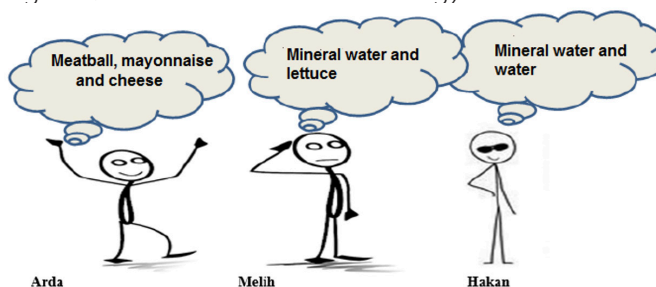


Which stickman opinion do you agree with? Explain your reason.

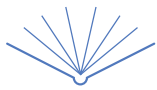
#### 3) Which Ones Pass into the Blood without Being Digested?

In this formative assessment strategy, it was aimed to provide the students with the knowledge that some foods did not need to be digested during the journey of foods in the digestive tract, and some foods were mixed into the blood without being digested. Similarly, the digestion of proteins was important since the concepts learned in the fifth grade such as vitamins and minerals were needed to be remembered.

**Figure 3.** "Which Ones Pass into the Blood without Being Digested?" Formative Assessment Strategy



Which stickman opinion do you agree with? Explain your reason. 4) Can You Find the Different Sentence?



In this formative assessment strategy, it was aimed to enable the students to be able to distinguish the concept of digestion as physical digestion and chemical digestion and categorize the many examples. It aimed to help the students to learn the skill of analyzing, which is one of the upper skills of the cognitive level, as well as the knowledge that in order for nutrients to pass into the blood, they should undergo physical (mechanical) and chemical digestion.

One sentence given below is different from the others in the sentence groups regarding "chemical digestion". Circle the sentence that is different and explain why you think it is different next to the relevant sentence.

**Figure 4.** "Can you find the different sentence?"

Which one is different?	Why is it different?
Butter breaks down in the small intestine	
Chewing the biscuit in the mouth	
Softening bread with saliva	
Gall breaks down the fat	
Which one is different?	Why is it different?
pancreatic juice breaks down the proteins	
Enzymes break down foods	
Food mixes in the stomach	
Effect of gastric juice on proteins	
Which one is different?	Why is it different?
The effect of enzymes in the stomach on food	
Passage of nutrients through the large intestine	
Passage of food through the esophagus	
Absorption of water from the large intestine	

The outcomes targeted by the formative assessment strategies applied to the experimental groups, the misconceptions it revealed and the concepts that students needed to learn are given in the table below.

### Study Group

This study was implemented at a public secondary school in Beykoz, Istanbul. In this study, data were collected from four 7th grade sections (total of 105 students) from the same school, two of which were experimental and two were control groups. Four 7th grade sections, which are the experimental and control groups, were randomly selected from all the branches in the school. The researcher was the science teacher of 2 classes (Sections 7D and 7E) identified as the experimental group. Another science teacher taught the students (Sections 7B and 7F) included in the control group. During the education period in which the research data were collected, the researcher science teacher was given not four but only two 7th grade branches by the school administration. For this reason, the researcher had to determine these two 7th grade branches given to her as the "experimental group". The other two 7th grade branches, which will be the control group, had to be selected from the 7th grade branches entered by another science teacher working in the same science department. The distribution of the students in the experimental and control groups taking part in the study by sections is shown in the Table 2 below.

**Table 2.** Distribution of Students in the Experimental and Control Groups by Their Sections

Section	Experimental Group	Control Group
7-B	-	23
7-F	-	28
7-D	28	-
7-E	26	-
Total	54	51
Grand Total	105	

Before the onset of the study, an official petition was submitted to the relevant authorities; materials such as the scale activity to be applied were presented and the necessary legal application permissions were obtained. The permission petition is available in Appendix-1. Based on this, in the science course, primarily the formative assessment probes consisting of 2 stages were applied to 33 students in order to identify the prior knowledge of the 7th grade students about this unit and their first information ever about the digestive and excretory systems or the concepts that had no scientific content (misconceptions), if any, were identified.

The formative assessment probes used in the study were related to the concepts of digestive systems, a subject available in the 7th grade "systems in our body" unit of the Primary School Science Course Curriculum. A pre-test was applied to the experimental and control groups and the students' answers were analyzed to identify the students' conceptual comprehension levels. Afterwards, in line with the experimental design, specific science lessons were planned to replace the misconceptions of the students in the experimental groups with scientific concepts or correct the alternative concepts. For this purpose, the following formative assessment strategies were applied: a) First drawing- last drawing, b) Can you find the different sentence? c) Where does the digestion of proteins begin? d) Which ones pass into the blood without being digested? In addition to these strategies, the students in the experimental groups were also given activities such as the digestive tract experiment, poster work, and game preparation.

For this purpose, new lesson plans were created for the experimental group students and a special education program including formative assessment strategies was implemented in these sections. The strategies applied to the experimental groups were designed and created by the researcher in a way to eliminate the common misconceptions about the digestive systems in students. For example, There are misconceptions that the digestive system is depicted as a pipe with two ends, the digestion of proteins begins in the mouth because digestion begins in the mouth, the systems in our body work in separate sections independently of each other, and all the nutrients taken into the body must be digested (Çuçin, Özgür, & Güngör Cabbar, 2020.) The formative assessment strategies were not applied to the students in the control group; instead they were taught in accordance with the outcomes projected in the 2014 Science program.

During the study (lasting for 6 weeks, 22 course hours in total), the researcher and the science teacher who taught the students in the control group were in constant communication and informed each other about the teaching processes.



## Data Collection Tools

### Formative assessment probes

The formative assessment probes in the study consisted of two stages. The first part of these questions included the options related to the question, and the second part included the part where scientific explanation of the choice was required. The formative assessment probes and formative assessment strategies utilized were generated by the researcher, inspired by the strategies in the book titled "Science Formative Assessment: 75 Practical Strategies for Linking Assessment, Instruction, and Learning" written by the subject matter expert Page Keeley (2011). The validity and reliability check of the probe questions were implemented by consulting expert opinions in the Fall of 2015. According to Lawshe's 1975 study, at least 5 different experts should be consulted to determine validity. For the determination, the opinions of 2 science teachers working in the same school and 3 science teachers working in different schools were taken. Teachers who expressed their opinions expressed their opinions by dividing them into three categories. They chose one of the categories "Cannot measure the targeted outcome, fully measure the targeted outcome, partially measure the target related outcome", and necessary corrections were made in the survey questions in the light of this information.

In the present study, an evaluation criteria for the two-stage questions was developed by Karataş, Köse and Coştu, (2003) was utilized to evaluate the formative probe questions numerically, and the answers given by the students were evaluated based on this key. The analyses of the open-ended answers of the students were carried out by categorizing the answers of the students as a whole.

#### 1) Which system?

The students who learned the basic structure of the digestive system organs and their simple functions in the fifth grade also learned the important systems in our body such as the circulation and respiratory system in the sixth grade. As far as the principle of spirality in science education is concerned, the students will learn more comprehensively about the digestive system in the seventh grade. Early in the seventh grade, the students regard the systems as systems that have separate functions rather than as a mechanism that works in harmony as a whole. This probe question helps to reveal what information students have about important systems such as the digestive, excretory, respiratory and circulatory systems that they learned previously, eliminate any misconceptions, if any, or integrate the knowledge and information they learned correctly.

#### Formative Assessment Probes: "Which system?"

This formative assessment probe is given below:

Mr. Mehmet the postman sets out from his home to deliver the daily mail. When he enters a street, just as he is about to deliver the letters into the mailbox, he encounters a stray dog in front of him. Mr. Mehmet's heart begins to beat rapidly, and he starts to have difficulty in swallowing. Mr. Mehmet, whose hands are sweating, starts to tremble out of fear. When the dog starts to bark and chase him, he feels that he should go to the toilet. In this particular case, regarding the systems in Mr. Mehmet's body:

a) The basic issue here is the heart pumping blood. The physical symptoms Mr. Mehmet experiences are connected to his circulatory system.

b) As the heart has pumped blood, all cells have received more oxygen than normal. This is pertinent to the respiratory system.

c) All systems worked in harmony and in balance in all physical reactions such as sweating of the hands and feeling the need to go to the toilet. This situation can be explained by homeostasis.

d) The physical symptoms we experience in emotional states such as fear and excitement are connected with the hormone adrenaline. Adrenaline is also secreted from the adrenal glands. This situation can be explicated by the functions of the excretory system.

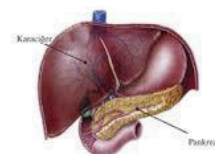
Which opinion do you agree with? Justify your opinion.

#### 2) What is the function of gall?

The students who learned the digestive system for the first time in the fifth grade learned the digestive system organs such as the mouth, pharynx, esophagus, stomach, small intestine, large intestine and anus (The outcome 5.1.2.1. illustrates the places of the structures and organs responsible for digestion on the model, respectively). In the seventh grade, in addition to these organs, the digestive organs and their functions will be learned. The students, who can hardly point out the location of the digestive organs, are supposed to learn the place and function of the liver, pancreas and gall secretion.

This probe question, which also has a visual content, in addition to one of the outcomes of the subject unit, which is "It illustrates the structures and organs that make up the digestive system on a model, plate and/or diagram, and explicates the functions of the liver and pancreas in digestion", also aimed to help the students to remember and learn the concepts such as digestion, digestive system, mouth, pharynx, esophagus, stomach, small intestine, large intestine, anus, liver, and pancreas.

#### Figure 5. Formative Assessment Probe: "What is the function of gall?"



Hasan, who visits their neighbor Ms. Sevgi with his family, who has had gallbladder surgery, becomes curious. He has not learned about the gallbladder in the digestive organs at school. He asks his family about the role of the gallbladder in digestion. The family members give the following answers.

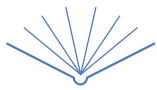
Mother: The gallbladder is a sac attached to the liver. It collects the waste in the liver. It has no role in digestion.

Father: The gallbladder is a sac attached to the pancreas. It stores the waste in the pancreas.

Sister: The gallbladder assists digestion, just like the pancreas and liver. It assists in the digestion of fats with the bile secretion it contains.

Brother: Together with the liver and pancreas, the gallbladder helps to break down the foods that go here.

Whose opinion do you agree with the most? Please explain with your reasons.



### Data Analysis

The data obtained from the data collection tools used were analyzed with the SPSS 16.00 statistical analysis program. In this study, although the number of students participating in the research was sufficient (105 students), it was determined that the data were not normally distributed (See Table 4). In order to understand whether the data was normally distributed or not, Kolmogorov-Smirnov Test was used in this research. The pre-test and post-test scores of the 7th grade students participating in the research were investigated with the Kolmogorov-Smirnov Test, and the analysis results showed that the data for all formative probe questions used in the research were not normally distributed ( $p < .005$ ). For this reason, in order to determine whether there is a significant difference between the mean scores of the experimental and control groups, the Mann-Whitney U test, which is one of non-parametric tests was used in this study.

### Results

In this results section, the answers given by the students in the experimental and control groups to only 2 formative assessment probes (1. What is the function of gall? and 2. Which system?) in the pretest and posttest are compared. The following section presents the findings of the study. Table 3 below illustrates Mann-Whitney U Test values of the answers given by the experimental and control groups to the "first formative assessment probe" in the pre-test.

**Table 3.** Mann-Whitney U Test Values of the Answers given by the Experimental and Control Groups to the First Formative Assessment Probe in the Pre-Test

Group	N	Mean Rank	Rank Sum	U	p
Experimental	52	38.73	2014.00	623	.000
Control	31	25.66	795.50		

When the Mann-Whitney U Test results of the answers given by the experimental and control group students to the first formative assessment probe in the pre-test were examined, it was observed that there was a significant difference between the scores ( $U=623$ ,  $p < .000$ ).

Table 4 below illustrates the Mann-Whitney U Test values of the answers given by the experimental and control group students to the first formative assessment probe in the post-test.

**Table 4.** Mann-Whitney U Test Values of the Answers given by the Experimental and Control Groups to the First Formative Probe Question in the Post-Test

Group	N	Mean Rank	Rank Sum	U	p
Experimental	52	66.27	3446.00	534	.000
Control	37	41.91	1550.50		

As far as the relevant Table 6 is concerned, based on the results of the Mann-Whitney U test, which was conducted to reveal whether there was any significant difference between the pre-test and post-test of the formative assessment probe titled as "What is the function of gall?" answered by the students in the experimental and control groups, it was observed that there was a significant difference between the pre-test scores. It was observed that there was a significant difference in post-test scores as well ( $U=623$ ,  $p = .000$ ). Nevertheless, while the pre-test rank average of the experimental groups was 38.73, it increased to 66.27 in the post-test. While the pre-test mean rank of the control groups was 25.66, the post-test mean increased to 41.91. While the increase in the control groups was 16.25, the increase in the experimental groups was 27.54. The results illustrated that the increase in the experimental groups with a high mean rank initially was higher than the control groups.

Table 5 below illustrates the Mann-Whitney U Test values of the answers given by the experimental and control group students to the "second formative assessment probe" in the pre-test.

**Table 5.** Mann-Whitney U Test Values of the Answers of the Experimental and Control Groups to the Second Formative Assessment Probe in the Pre-Test

Group	N	Mean Rank	Rank Sum	U	p
Experimental	51	36.46	1859.00	288	.520
Control	49	41.93	1929.00		

When the Mann-Whitney U Test results of the answers given by the experimental and control group students to the second formative assessment probe in the pre-test were examined, it was observed that there was no significant difference between the scores ( $U=288$ ,  $p > .000$ ).

Table 6 below illustrates the Mann-Whitney U Test results of the answers given by the experimental and control group students to the second formative assessment probe in the posttest.

**Table 6.** Mann-Whitney U Test Values of the Answers of the Experimental and Control Groups to the Second Formative Assessment Probe in the Post-Test

Group	N	Mean Rank	Rank Sum	U	p
Experimental	54	68.62	3705.50	580.200	.520
Control	49	53.69	2631.00		

As far as the relevant table is concerned, based on the results of the Mann-Whitney U test, which was conducted to reveal whether there was any significant difference between the pre-test and post-test of the formative assessment probe titled as "Which system?" answered by the students in the experimental and control groups, it was revealed that there was a significant difference between the pre-test and post-test scores ( $U=580$ ,  $p < .000$ ).

### Discussion, Conclusion and Suggestions

In the present study, some formative assessment probes were formed in an attempt to reveal the initial and preliminary knowledge and information of the 7th grade students about the digestive systems. The formative assessment probes not only reveal whether students know which subject or concept, but also help to identify which subject students have learned and how they have learned. As far as the answers given by the students to the probe questions in the pre-test and post-test in the results section, it was clearly revealed that the students had some misconceptions. Students remembered the information they had learned previously in the formative assessment probe called "First Drawing, Last Drawing" and demonstrated this knowledge and information in their drawings. It was clearly observed that the misconceptions about these concepts were not reiterated by the students in the answers they provided in the post-test after the formative assessment strategies were implemented.

The four formative assessment strategies implemented in the experimental groups were decided in an attempt to resolve the students' misconceptions identified in the pre-test. Each strategy was designated to eliminate a certain misconception and was implemented to the experimental groups. Throughout the learning process, the functions of some structures and organs that were difficult and complex to learn such as pancreas, liver and gall bladder were negotiated in detail by the students using the formative assessment strategy question titled "What is the function of gall?". With the formative assessment strategy question



titled "Can you find the sentence that is different?", it was aimed to distinguish the physical and chemical digestion concepts in the unit that were confused the most. The most common physical and chemical digestion examples in daily life were analyzed one by one and their reasons were negotiated. Similarly, the subject of digestion places of foods learned through memorization was taught to the students using the assessment strategy question titled "Where does the digestion of proteins begin?". These strategies helped the students to replace the incorrect information patterns with the correct ones. With the formative assessment strategies called "first drawing and final drawing", the students identified the concepts and misconceptions with no scientific content and they had the opportunity to replace these misunderstandings with the correct ones within the education process.

With the formative assessment strategies implemented in the experimental groups in accordance with the preliminary information identified by the formative assessment probes, it was attempted to increase the conceptual understanding of the students and replace the misconceptions with the correct ones. The pre-test mean rank obtained from the formative assessment probe titled "Which system?" revealed that there was further increase in the experimental groups after the implementation in comparison to the control groups. The formative assessment strategies and other methods implemented in the experimental groups that did not have a significant difference in terms of pre-test scores before the implementation of the study or had lower mean rank were effective in enhancing the students' conceptual understanding levels. In the formative assessment probe titled "What is the function of gall?", the misconceptions such as 'the gallbladder is an organ connected to the pancreas instead of the liver' and 'the fact its name is a sac does not mean that it is related to waste storage and digestion' were revealed and removed from the students.

When the results of the previous studies were examined, it was seen that formative assessment generally had a positive impact over the students' achievement and conceptual understanding; however, in a few studies, it did not have a positive effect on students' learning (İnalıtun & Ateş, 2018). The present study happens to be among the studies that enhances the level of conceptual understanding positively. When the international studies on formative assessment are examined, it explicitly appears that scientists from various countries take a close interest in this subject. Nevertheless, despite this interest, it is plainly evident that formative assessment has not attracted a great deal of attention in Turkey. Therefore, it immediately emerges that there is a genuine need for studies on the subject both in order to make the subject of formative assessment widespread among teachers and researchers in Turkey and make a contribution to the relevant international literature (İnalıtun & Ateş, 2018).

When the other studies in which the formative assessment method has been used in Turkey are examined, it clearly emerges that these studies are pertinent to the concepts in chemistry (Kıryak, Bulunuz, & Zeybek, 2015), in physics (Bulunuz, Bulunuz & Peker, 2014; Bulunuz & Bulunuz (2016) and (2017), and in astronomy (Topçu, 2017). On the other hand, there are a few studies available done by Tekin (2010) and Gülen (2010) in another field, in the teaching of mathematics. When the studies in the relevant literature in the last five years are examined, it has appeared that the studies have generally been on English language teaching and learning.

In these studies, Kurtulmuş (2018) compared the perceptions of Turkish and international adult learners of English as a foreign language about formative assessment; Sarı (2019) investigated the effect of using formative assessment on foreign language learners' writing anxiety; In an action research study, Özkan (2020) investigated the attitudes, intentions and practices of English language instructors in English preparatory schools in Turkey regarding formative assessment; Somuncu (2021) conducted a case study of pre-service English teachers' cognition on formative assessment; and in the evaluation of productive language skills

of English teachers, Arslan (2022) conducted a perspective study on assessment and evaluation, literacy level, and evaluation of productive language skills through formative assessment.

It clearly seems to be the case that both the lack of studies in the field of science and the effectiveness of the formative assessment method in the teaching of biology concepts, which is one of the sub-branches of science, have not been sufficiently studied. However, according to Özyay (2008), the difficulty of concretizing the abstract issues in teaching biology subjects and the use of traditional teaching methods and techniques by teachers led to learning difficulties and misconceptions. Therefore, in the present study, unlike in the other studies, the formative assessment method was used in teaching the concepts of "biology", which was one of the sub-branches of science at the national level.

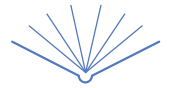
When other studies in the relevant literature are examined, it turned out that Erdogan (2010), Ormanci and Özcan (2012) and Öcal (2014) studied the unit of systems in our body using drama, Güven and Aydoğdu (2009) portfolio and Gök (2014) 7E methods. Analysis of these studies revealed that achievement test, questionnaire and attitude scales were used as data collection tools. They measured the students' pre and post-application knowledge levels with multiple-choice achievement tests. These tests were not qualified to reveal students' misconceptions before the implementation of the study. This study, on the other hand, was implemented with open-ended questions in line with the nature of formative assessment probes and strategies. Consequently, this study is significant since it has revealed the misconceptions and the way students have constructed knowledge in their minds.

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