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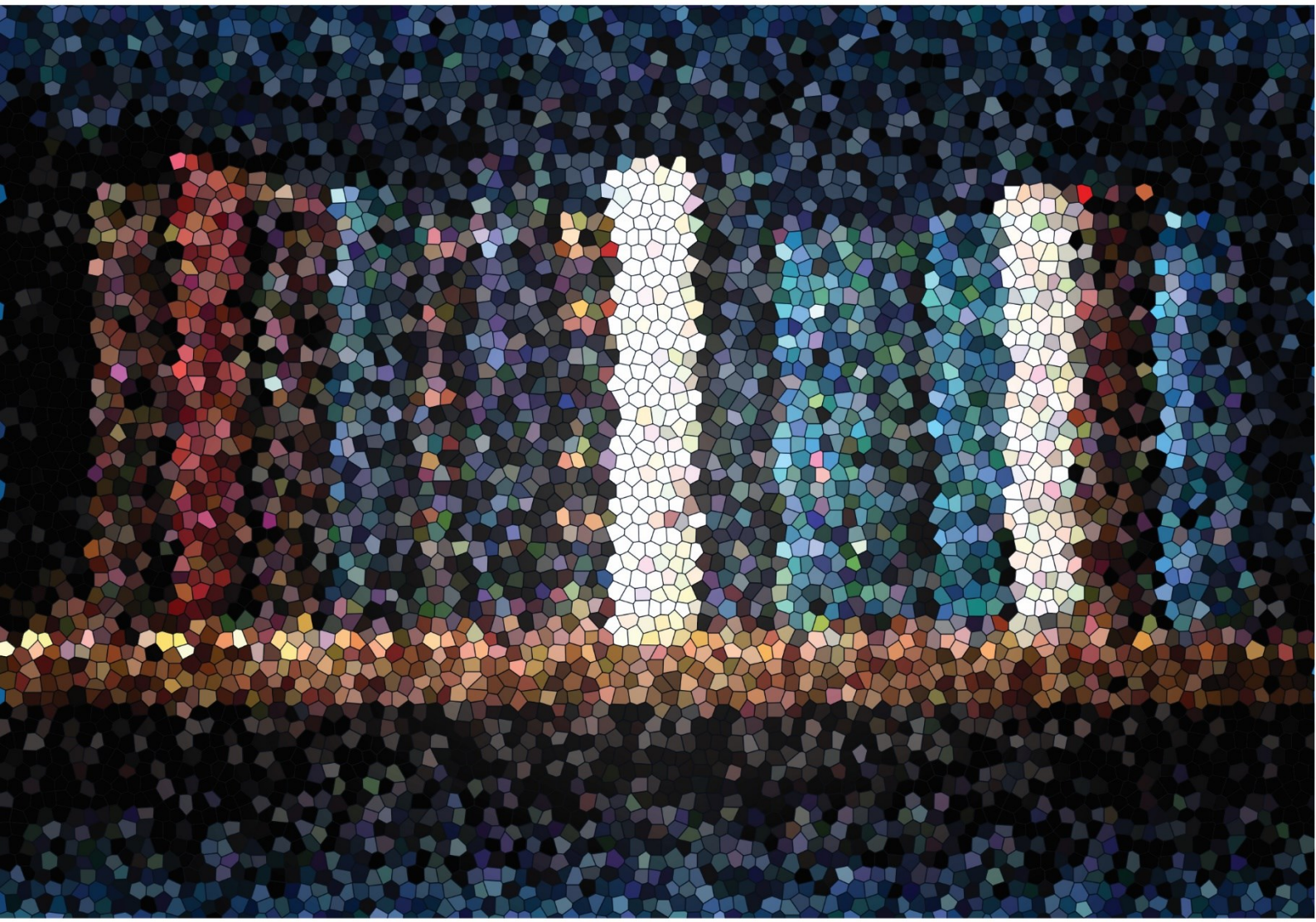

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Contents

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Critical Reflections of Pre-Service Teachers Regarding the Impact of a Special Education Practicum on their Professional Identity

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Research article

Critical Reflections of Pre-Service Teachers Regarding the Impact of a Special Education Practicum on their Professional Identity

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Abstract

This study examines the impact of a special education practicum program on the perceptions of Israeli pre-service teachers (PSTs) regarding their professional identity development. The sample comprised of 30 PSTs, 15 Jewish and 15 Arab, attending a ccollege of education in Israel. The study implemented a methodological approach that consisted of a qualitative analysis of the content of the PSTs' critical reflections, which were collected at two time points, i.e. the end of the 1st semester and the end of the 2nd semester. The results iindicated that the special education practicum program contributed to the development of professional traits and teaching abilities of the participants, namely, to their ability to plan and teach successful and experiential lessons in an adaptive manner, and to develop an inclusive and beneficial class climate for both students and teachers.

Keywords:
special education, pre-service teachers, professional development, critical reflections

1. Introduction

Numerous studies dating back to the mid-2000s have addressed the development of professional identity (PI) among pre-service teachers. Schepens, Aelterman & Vlerick (2009) explored this topic by examining two aspects: the demographic and personality traits that influence one's inclination to become a teacher, and the impact of experience and education on this journey. The preparation process for becoming a teacher seems to be a significant predictor of teachers' self-efficacy. Throughout this preparation phase, their professional identity evolves as a culmination of various interacting factors, both individual and collective in nature.

According to Tickle (1999), professional teaching identity (PTI) is defined as the sense of belonging and identification that teachers feel towards their profession. PTI comprises of two interconnected elements: the influence of prior experiences and the personal qualities. These elements can impact how teachers perceive themselves in their role, and how they are perceived by their students, colleagues, parents and other members of the community (Manor-Binyamini, 2001). PTI can influence in multiple ways the behaviour of the teachers, their work style, thinking processes, beliefs and expression (Altman & Katz, 2001). It can also influence the teacher's degree of work satisfaction, their sense of burnout and attrition from the education system (Fisherman, 2016; Kelchtermans, 2009).

The objective of the current research is to examine the professional identity development of PSTs who participated in a practicum-training program as part of their special education formation at a teaching college located in Northern Israel. The uniqueness of the current research is that it examines PSTs from two different cultures and ethnicities in Israel: Jewish and Arab.

2. Theoretical foundation

2.1. Professional Development in Teaching

Professional development is a result of the ongoing evolvement of the teacher's professional knowledge and skills (Bolam, 2002). As part of their profession, teachers are constantly required to broaden their professional knowledge, enhance their understanding of teaching and learning dynamics, and cultivate novel teaching techniques and abilities (Darling-Hammond (2005). One of the most critical elements in PSTs development was found to be their interaction with the mentoring teacher and the students, as well as the breadth of experiences offered to the PSTs by their mentoring teacher (McElwee et al., 2018).

Professional identity is an integral aspect of the overall individual identity, serving as the response to

the question, "Who am I professionally?" (Kozminsky, 2008). Research literature found teacher's professional identity to impact the teacher in various ways that include their work methods, thinking patterns, work satisfaction, the sense of burnout and other aspects (Altman, & Katz, 2001; Fisherman, 2016; Kelchtermans, 2009; Kozminsky, 2008).

According to Schepens et al. (2009), another factor that determines PSTs level of dedication to the teaching profession is the social support and partnership with the faculty members. Additional factors identified to predict the professional identity level are personality traits and the initial motivation. The study described examined the manner in which the input variables (such as personality traits and motives of student teachers) and process variables (such as support and the sense of readiness for the teaching profession) impact the PSTs' self-efficacy, dedication, and professional mindset upon completion of their studies (Schepens et al., 2009).

2.2. Training Pre-Service Teachers in Israeli Special Education

Israel is a diverse, multi-ethnic and multi-cultural society (Al-Haj, 2012). The special education training in Israel is held in several types of institutions including education colleges and universities. In 2020, the Council for Higher Education published a training framework for future teachers that adheres to principles advocated in global literature. The framework includes the following: enhancing academic studies within specific disciplines; prioritizing practical hands-on experiences; establishing a common curriculum core for diverse training programs, incorporating teaching strategies tailored to students with diverse needs and varying socio-cultural backgrounds. Since special education is referred to as an academic discipline, students attending teacher training programs are required to complete courses in special education, especially due to the increased integration of special needs students into general education.

The special education program at education colleges in Israel spans four years. Throughout the initial three years, students engage in both academic coursework and practical teaching experiences. They delve into the teaching and learning methods tailored for students with special needs within distinct frameworks (designated for the ages of 6 to 21) as well as integrative frameworks. During their training, the students are exposed to various populations, including learning disabilities, ADHD, behavioural disorders, emotional disorders, cerebral palsy and other developmental intellectual disabilities (Bracha & Hoffenbartal, 2021).

According to Assadi and Murad (2017), as part of the practicum training, the PSTs have the opportunity to develop an understanding of different facets of the education system, including the amenities, curriculum and the student population. They will also gain familiarity with textbooks, instructional materials, and teaching techniques employed across various subjects and disciplines. The practicum training will allow the PSTs to develop professional work habits, gain expertise in crafting well rounded and effective lesson plans, and deliver comprehensive teaching units.

The practicum programs in teacher training institutions are required to extend over the period of their three-year education, as per the Israeli Council for Higher Education and the Ministry of Education. Practicum programs are typically structured around two main concepts: spaced practicum (also termed "weekly practicum" or "regular practicum"), which involves pre-service teachers (PSTs) attending school classes once or twice a week for the entirety or part of the school year; and consecutive practicum (also referred to as "practicum work week"), where PSTs engage in teaching activities daily for a week or two. There can be up to two such periods over the course of one school year (The Council for Higher Education, 2020).

In Israel, PSTs undergoing the practicum training receive continuous guidance from a pedagogical instructor from the college as well as from the trainer. The purpose of this guidance is to educate the PSTs on the teaching profession, on the communication with the students and on identifying and acknowledging their various needs. The practicum is complemented by a pedagogical course offered at the college (Bracha & Hoffenbartal, 2021). During the practicum experiences, the PSTs are evaluated through several means. These include: a reflective digest (portfolio), observation lessons and the training teacher's evaluation.

The practicum program comprises of two special education training models: the concurrent model, spanning four years for regular PSTs, and the consecutive model, lasting one year and attended by PSTs holding a prior academic degree. Throughout their practicum, PSTs must allocate one day per week in the training classroom, where they conduct two lessons: a group lesson and an individual lesson. In

addition, PSTs are required to actively engage during the school day with other groups of PSTs in lessons led by the training teacher or other professional teachers.

3. Research Aim

The aim of the current research is to examine the short and long-term impact (after the first and second semestrial programs, respectively) of a special education practicum program on the perceptions of Arab and Jewish PSTs regarding their professional identity development. Both groups attended a pedagogical course accompanying the practicum program of the college. The course is taught in Hebrew and the practicum is conducted in Jewish and Arab schools, based on the ethnic-lingual affiliation and residential proximity of each participant.

4. Research Question

The following research question was formulated: do the reflections regarding the impact of the special education practicum program on the professional identity development differ between Arab and Jewish participants as well as between short and long-term periods (after the first and second semestrial programs, respectively)?

5. Research Methodology

5.1. Tools

In this qualitative research, the research tool is the thematic content analysis of the ddetailed critical reflections (identification of codes and themes), which were designed and composed by the PSTs in two time points, end of the 1st semester and end of the 2nd semester. The goal of this research was to provide an in-depth examination of the PSTs' perception regarding their professional identity development. The definition of reflection in the context of this study is the participant's description of past experiences and learning processes, with the ultimate goal of positively affecting their future actions. Such reflections are considered to provide a more reliable and deeper analysis than other qualitative research methods, such as surveys. The use of reflection in the context of teaching programs may shed a better light on the benefits of the training and the degree of personal and professional growth experienced by the participant (Castleberry et al., 2016).

5.2. Participants

30 PSTs (15 Arab and 15 Jewish) underwent the special education practicum training program during the 2021-2022 academic years. The PSTs were in their second year, which is the only year during which they had practical training in special education. Prior researchers recommended that to establish a sound theory, studies should include between at least 20 to 30 participants (Creswell & Poth, 2018). According to Creswell & Poth (2018), in grounded theory studies, it is crucial to select participants who will have a significant contribution to the theory the study aims to establish and provide data that the researcher can use to establish their theory. This involves purposefully sampling a group of individuals who can offer the most insightful information related to the research problem being investigated.

6. Findings

The findings of the reflections are presented based on the themes that emerged during the reflection of 30 PSTs regarding their practicum experience.

6.1. A Short Practicum Experience

An analysis of the content regarding learning and personal insights derived after a short practicum experience in a special education classroom, yielded the following themes:

Theme 1: Concerns and Early-on Challenges

Some of the concerns were raised by the PSTs for whom the practicum was their first experience with special education and thus were unsure as to how to carry on with the students: *"…I had many concerns… this is the first time I face a special education classroom"* (R.S.).

Additional concerns regarded the code *ages of the students in the practicum classroom*: *"… I was placed at an eleventh grade in high school. These are students studying for their matriculation exam, and it made me nervous…"* (H.A.). Another code was the *type of disability* of the special education students: *"…when I was told that the class population included students with learning difficulties and behavioral difficulties, I had a concern that I would not be able to face their disciplinary problems and teach them…"* (R.S.). A different code within this theme was *the lack of knowledge of the learned materials and teaching methods in special education: "… I did not know what they teach in special education, I was not sure how to prepare the lessons and how to teach… I felt that I was lost"* (G.B.).

Theme 2: Personal Development

In all the reflections, the PSTs described a *sense of satisfaction and belonging to the field of special*

education. Here are some of their statements reflecting this code: *"…the day-to-day work with students with special needs is both physically and mentally challenging, and yet fulfilling. The love they express towards me and their desire to include me is an amazing experience…"* (M.A.). Another code was the *sense of self-efficacy* PSTs experienced following the practicum: *"I learned that I need to believe more in myself, since I had proven to myself that I can teach the classroom well, instill confidence in the students and enrich their knowledge"* (R.S.). The PSTs further indicated that they perceived the practicum classroom as a place that grants them a sense of *inclusion, flexibility and patience towards the students in the classroom: "I felt that working with these children opened me to values such as love, patience, inclusion and acceptance of others, and most importantly, to seeing each student as the world and all that is in it."* (A.S.).

Theme 3: Professional Development in Special Education

The PSTs described their *ability to prepare learning materials* and adapt them to the students: *"I felt that by expanding my knowledge in the field of learning disabilities, I better understood the manner of teaching and knew how to adapt the learned materials to the students"* (L.H.). Most of the PSTs further noted the *ability to receive feedback and learn from mistakes.* Here is an example of their thoughts: *"… I worked very hard to implement all the notes I received in the first observation and do significant self-work. During the second observation, I was more prepared and implemented most of the feedback I received."* (A.G.).

Theme 4: Learning from the Role Partners

All the PSTs described the *inclusion and support of the staff: "… I was very nervous. I did not know how to teach a first test lesson via zoom. I immediately received a phone call from my pedagogical instructor and the training teacher. They explained everything to me and gave me tips on how to teach the lesson. I felt confident. I felt that I was not alone"* (SH.M.).

Theme 5: Creation of a beneficial class climate

The PSTs perceived *adapting the teaching methods to the students* as a way to create a beneficial class climate: *"… it is important to allow the students to be active in class by adapting the teaching methods to them."* (R.S.). Some of the PSTs acknowledged the importance of a *profound acquaintance with the students* to create a beneficial class climate: *"I was interested in the students, and it was important for me to spend time with them… it was important to know of every difficulty, strength and talent. It really helped me to navigate the classroom"* (H.SH.). The PSTs further noted the *examination of the team's working methods* as a way to create a beneficial class climate. According to one of the PSTs: *"Sometimes I felt that I did not know how to react to them…I started examining certain situations, waiting to hear how the staff reacts to students when they are talking back or acting inappropriately…"* (A.B.).

Theme 6: Perception of the teacher's role: personal skills

The PSTs perceived the teacher as possessing *inclusion, patience and empathetic abilities towards the students: "In my opinion, one of the most important things about a teacher is that a good teacher has great patience. These students need a lot of love, patience and belief so that they can continue developing …"* (N.T.).

Theme 7: Perception of the teacher's role: professional skills

The PSTs described the teacher as having *knowledge and proficiency* in the learned materials and in teaching strategies: *"A good teacher is a source of information for their students, and they lean on their teacher"* (A.A.). The PSTs further noted that they perceive the teacher figure as having the ability to *adapt the teaching to the students' abilities*: *"The teacher must create adapted learning materials and tests for the different lessons"* (L.CH.). The PSTs additionally noted that a good teacher uses *diverse and creative teaching methods: "An ideal teacher would take all of the old and tiresome teaching methods and step out of the box, be creative…"* (SH.B.).

Theme 8: Relationship with the School staff - A Meaningful Positive Experience

All the PSTs expressed a *sense of belonging and involvement* in the classroom and in the school: *"working with my training teacher is a true privilege. My communication with her was excellent from the start… the educational staff in school welcomes us with a smile each weak. They encourage us and make us feel that we are part of the school… we feel welcome"* (CH.Y). A different PST described her *involvement in the school*: *"…I was part of the special education staff meetings and took part in conversations with parents. I participated in class trips and helped the teacher in other classrooms as well. During the professional lessons, I helped other*

teachers by handing out worksheets, helping struggling students..." (R.S.). The PSTs further noted the *meaningful support from the staff:* "each week I would personally consult with the training teacher regarding the lesson plan, including in receiving special tips to carry out the lesson in the most effective way" (L.CH.). Another aspect described by the PSTs is the *learning and professional development* following the relationship with the team during the practicum: *"... I learned a lot from the training teacher on how to interact with the students..."* (CH.Y.).

Theme 9: Relationship with the School staff - A Challenging Experience

Several PSTs described their *conflicts with staff and their resolutions*: *"the relationship with the educational staff was also great, except for one unpleasant incident during one of my lessons. We resolved everything after the lesson, and it did not happen again"* (A.B). One PST described a *difficulty communicating with the training teacher: "I had a difficulty communicating with the training teacher, up to a point of an interference of the pedagogical instructor. The teacher was busy and did not have time for me... After the interference of the pedagogical instructor, there was an improvement."* (A.M.).

Theme 10: Relationship with the Classroom Students

All the PSTs described the profound acquaintance with the students and the creation of a personal relationship with them: *"... without noticing and quite quickly, I connected with the students. I knew them beyond their names and began paying attention to small things that characterize them... during the semester, I felt them open up to me more and more..."* (G.B.). Many PSTs noted their *perceptions of the students' traits*: *"the classroom students were charming and filled with love. I still remember the first time they welcomed me to the classroom, with genuine smiles and kind, beautiful faces. These students have big hearts and are very smart. Once you love them, they sense it and love you back"* (M.SH.).

6.2. A Year-Long Practicum Experience

An analysis of the content regarding learning and personal insights after a yearlong practicum experience yielded the following themes:

Theme 1: Personal Development

All the PSTs described the *love and connection they felt to the students and to the* profession*: "... the strong insight I had during the practicum was how important it is to feel connected to what I do, love it, live it and come to work with energies, curiosity and joy"* (CH.Y). Majority of the PSTs described *their sense of satisfaction and self-efficacy* following the practicum experience: *"... sometimes I felt that the students came into the classroom with lowered spirits, and after experiencing success during my lesson, their spirits were high and they experienced happiness. This satisfied and motivated me to continue investing"* (L.CH.).

Theme 2: Professional Development in Special Education

Most of the PSTs described the opportunity they had to become *familiar with the world of special education students: "...during the semester I became acquainted with the students and their specific needs, both educationally and emotionally..."* (S.A.). The PSTs further noted the *adoption of tools and strategies for special education* that will help them in the future: *"I learned I had to repeat things multiple times and use diverse teaching methods and creativity. Sometimes progress is slow, but to witness them reaping the fruits of their labor is one of the most exciting things"* (H.SH.). The PSTs additionally mentioned their ability to *plan and teach adapted, successful and experiential lessons*: *"I learned the importance of lessons planning. I learned to come prepared to the lessons, think of all of the questions my students can ask so that the lesson will be adapted and successful"* (K.P.).

Theme 3: Learning from Role Partners

The PSTs described the *inclusion and support by the staff and the pedagogical instructor: "in the beginning of the school year, I wanted to quit due to the workload in the practicum, but the training teacher and the pedagogical guide did not give up on"* (M.SH.). The PSTs further described the *demeanor of the training teacher with the classroom students* as a source for learning: *"I really loved watching how the teacher conducts in class so that the students will succeed. I find it amazing that the teacher is able to adapt herself to the needs of each student."* (S.A.).

Theme 4: Creation of a Beneficial Class Climate

The PSTs perceived the adapting of the *teaching methods to the students* as a way of creating a beneficial class climate: *"I tried to step out of the box and change the teaching methods I was familiar with from my school days, by adding more group tasks and technological tasks that would make learning more*

interesting and inviting for the students" (I.B.). Many PSTs noted the topic of *adapting the learned materials according to levels* as a way to of creating a beneficial class climate: "*in the beginning it took me a while to know what is suitable for each student. Going forward, the more I learned about the students, the more I knew how to reach out to each of them differently"* (A.G.). Other PSTs referred to the *formation of a safe connection with the students* as means to the creation of a beneficial class climate: *"... each day I built my connections with the students and grew to know each of their qualities, who's friend with whom, and what helps each of them relax when there is an outburst in the class..."* (SH.M.). Other PSTs referred to the topic of *setting clear rules and boundaries* for creating a beneficial class climate: *"I was able to lead the classroom and the students participated attentively in all of my lessons, due to the clear rules and boundaries I presented in the beginning of each lesson, without taking away from their motivation"* (R.H.).

Theme 5. Perception of the Teacher's Role: Personal Skills

The PSTs perceived the role of the teacher as possessing *inclusion, patience and empathy towards the students:* "*during the practicum I learned what a good teacher is. A good teacher has an open heart and has love for all the students"* (SH.B.). The PSTs further noted that the teacher figure is an individual with an ability to *establish interpersonal relationships with the students*: *"I see a good teacher as a teacher who has a personal relationship with the students"* (H.SH.).

Theme 6. Perception of the Teacher's Role: Professional Skills

The PSTs perceived the teacher as having the *ability to increase students' motivation and cooperation:* "*I believe that the teachers have the ability to teach students to love learning... I learned how important it was to empower special education students"* (L.CH.). Few PSTs described the teacher as having the ability to be *present and assertive in the classroom: "the teacher is a central figure in the student's life and must therefore set a personal example to them. It is important for the teacher to have presence in the classroom and be assertive"* (H.SH.).

Theme 7. Relationship with the Educational Staff in Class and in School

The PSTs mentioned the *significant support they received* from the staff: *"I have established deep and personal relationships with the staff members. I had the honor to work with a training teacher of great stature, who was also my friend and supporter"* (Y.B.). Some participants mentioned the *sense of belonging and involvement in the classroom and in the school: "... the moment I entered the classroom, I was welcomed with a smile and a hug from the students and the amazing staff"* (SH.M.).

Theme 8. The Relationship with the Classroom Students

Most of the PSTs described their *profound acquaintance with the students* and the formation of a personal relationship with them: *"the students in the practicum class were my reason for smiling each Monday morning. I was close to each of them... they saw me as a friend and older brother, with clear boundaries and mutual respect"* (A.M.).

7. Discussion and Conclusions

The current study investigated the short and long-term impact (after the first and second semestrial programs, respectively) of a special education practicum training program on PSTs from Israeli Arab and Jewish cultures, as determined through the content analysis of their perceptions regarding professional identity development.

According to the findings, differences were found between the two time points in the professional development of PSTs during their practicum experience. Specifically, the findings indicated that the PSTs' professional development was more significant following the longer practicum period. This gap was evident in several parameters. By the end of the first semester, the PSTs used mainly technical terms such as preparing and teaching learning materials, to describe their learning and personal insight acquired after the practicum. However, at the end of the second semester, the PSTs described other aspects, such as: adopting tools and learning strategies in special education; teaching adaptive, successful and experiential lessons; and adapting their teaching to the various levels of the students in the practicum classroom. Furthermore, by the end of the first semester, the pre-service teachers primarily discussed their capacity to develop personalized and educational approaches for special education students, whereas at the end of the second semester, they emphasized the significance of understanding their students' inner world.

Another difference that was observed between the two time points focused on the trainer. At the end of the first semester, the PSTs discussed their learning

experiences after receiving feedback from both the traininer and the pedagogical instructor. However, by the end of the 2nd semester, their attention shifted towards observing the trainer's interactions with students in the classroom as well as the collaborative efforts with fellow pre-service teachers (PSTs) during the practicum, recognizing these as valuable learning opportunities. These findings verify our hypothesis and are in accordance with prior research literature indicating that PSTs benefit more from actual practical experiences during the practicum and from a positive interaction with the trainer, rather than from technical and theoretical aspects (McElwee et al., 2018; Schepens et al., 2009).

Another issue noted by the PSTs in their reflections was the creation of a beneficial class climate. At the end of the first semester, the PSTs emphasized the importance of significance familiarity with the students, described the methods implemented by staff in the classrooms and even the instances where they sought the guidance of the training teacher or class aide. However, by the end of the second semester, the PSTs detailed actions they independently took to foster a positive classroom environment. These actions included: adapting their teaching to the different levels of students in the classroom; forming a secure bond with the students; enforcing clear rules and boundaries during the lessons; and even implementing theories learned in college within the practicum setting.

These findings verify our hypothesis and are in accordance with prior research literature indicating that the exposure of PSTs to special needs children at the outset of their training allows them to experience with interactions with both students and colleagues, while applying theoretical and academic skills acquired during their studies. The practicum aims to provide PSTs with real-life experiences to enhance their future capabilities as teachers and contribute to their professional development in the field of special education though practical experiences rather than academic studies alone (Schepens et al., 2009).

During the research, the PSTs additionally described their perceptions of the role of the special education teacher. In terms of personal skills, in both semesters, the PSTs described the teacher as possessing attributes of inclusion, patience and empathy towards the students. The difference observed between the two semesters focused on the shift from focusing on the students' emotional world to the importance of establishing personal relationships with the students. In terms of professional skills, whereas at the end of the 1st semester, the PSTs described the teacher's role as possessing expertise and proficiency in the learning materials and teaching strategies, at the end of the second semester, their attention focused on the teacher's presence and assertiveness in the classroom, as well as their capacity to enhance student motivation and cooperation.

These findings are in line with prior research literature, according to which the PSTs' understanding of the teacher's role evolves throughout their training and is influenced by their skill development and application of acquired knowledge abilities. As their learning progresses, their perception of the teacher's role shifts in alignment with their professional and educational growth. In the early stages of their studies, the PSTs focus on the emotional aspect of teaching. As their learning advances, they gradually begin shifting their focus on other professional attributes. This finding is in accordance with the recommendation to introduce PSTs to practical training at the outset of their training, to enable them to grasp the intricacies of their role and develop a clearer understanding of their professional role (Assadi & Murad, 2017).

Finally, the PSTs described their relationship with the students in the practicum classroom. At the end of both semesters, the students discussed their profound understanding of the students and the personal relationships they formed with them. The primary distinction identified between the two semesters was that at the conclusion of the first semester, the PSTs characterized the students based on their initial perceptions of them, while at the end of the second semester, they reflected on the need to say goodbye to the students who became quite meaningful to them. These findings indicate that the PSTs experienced a more notable progress in their professional identity at the end of the 2nd semester as opposed to the end of the 1st semester, following the practicum.

8. Research limitations and future directions

The research took place at one academic Jewish college where both Jewish and Arab PSTs were enrolled in the Special Education program. Therefore, there is a need to conduct research in other teacher training institutions and explore the professional growth, self-efficacy, and perceptions of the role of Special Education teachers among PSTs who have completed their practicum training. Moreover, at the time of data collection in the current research (the academic year of 2021-2022), the Covid-19 pandemic

was still raging. As a result, the PSTs experienced remote teaching and learning in light of quarantines and lockdowns that took place during their first semester. Thus, we consider that it is important that the research be conducted again when PSTs undergo a yearlong physical practicum in the classrooms.

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Contributions of the School in Providing Quality Educational Services, Products, and Goods

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Theoretical article

Contributions of the School in Providing Quality Educational Services, Products, and Goods

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Abstract

This paper focuses on highlighting the results of some theoretical investigations regarding the contributions of the school from the perspective of providing quality educational services, products and goods. In the first part of the study, we bring to attention a series of terminological clarifications regarding the main concepts used, namely educational marketing, services, products, and educational goods. We allow ample space for the analysis of contemporary views of what exactly is meant by educational services and what is expected of the services provided by the school. We approach critically and analytically both the actual educational services, represented by the teaching-evaluation activities, as well as auxiliary services and the concept of human educational capital. Being a subject strongly connected with the current educational reality and practice, we consider it necessary to clearly delineate the concrete possibilities of ensuring quality educational services and products, both for students, parents, and the community. Therefore, this paper presents multiple types of activities and directions of approach to ensure the educational goods that students need in order to meet the current and prospective demands of society are provided. Finally, we bring to attention the theory of educational goods, on the basis of which the study can be further expanded, as well as some directions for the optimization of the efficiency of educational services offered by the school.

Keywords:
educational services, educational products, educational goods, the theory of educational goods

1. Introduction

Marketing is a scientific approach that requires not only knowledge of consumer requirements but also anticipating said requirements and continuously adapting to the needs of the beneficiaries. This approach requires a set of scientific methods and techniques that can quantitatively and qualitatively analyse the phenomenon as well as predict market trends. Therefore, marketing becomes a management function.

Educational marketing represents the design, implementation and evaluation of a strategic educational plan that considers the exchange relationship between the school and its beneficiaries and the achievement of the educational objectives of the school institution. It is desirable that the school is prepared to adapt its educational programme to the changing needs of the direct beneficiaries (students), while respecting two functions: a primary function consisting of the delivery of educational services to the students and products to society and a secondary function providing the population of the area with attitudinal, behavioural models, moral norms, etc. As such, the school maintains itself as an open system, an approach that is in line with contemporary educational paradigms.

2. Current perspectives on educational services

Educational services represent ”forms of educational activities designed and provided by institutions, structures, groups, and specialized persons through which educational/psycho-pedagogical interventions are carried out, psycho-pedagogical assistance activities are organized, educational support and counselling are offered, opportunities for affirmation, (self) education, and personal and professional (self) fulfillment are provided” (Bocoș et. al., 2019, p. 354). Educational services have a high degree of addressability, being oriented towards satisfying the needs and interests of a wide audience, starting from preschoolers and students of different ages, up to parents, teachers, and other members of the community. Considering the subject of the present work, the focus will be on the educational services provided by the school.

Any educational product present on the market of formal educational services includes the following components:

- *The actual educational services, respectively the didactic activities of teaching - evaluation,* embodied in courses, seminars, laboratories, lessons,

projects, theses, tests, exams (which verify and value the student's yield and performance). At the level of this component, the providers of the educational services are the teaching staff who contribute to shaping the behaviour and personality of the direct consumer of the educational programmes (the schoolchild, perceived as a subject to be educated).

- *Auxiliary educational services* are comprised of general administrative activities concerning the normal development of the educational process and the management of the material resources necessary for the teaching activity itself (economic-financial activities, managerial activities, secretarial activities, administrative activities, extracurricular activities that support and/or complete the didactic activity).

- *The human educational capital* consists of all the knowledge, skills, abilities and competencies acquired by the direct consumer of educational services. This develops over time and can have long-term effects, being subject to depreciation; therefore, the decision to invest in human capital is not simple, often being a collective decision. The whole family participates in the adoption of such a decision, balancing the perspectives offered by different alternatives, the efforts and effects involved, the costs and benefits (expenses and results).

The educational services that can be offered in a school institution are: courses, seminars, conferences, communication sessions, debates, performances, cultural activities in libraries, extracurricular activities.

The system of forms of organization of instructive-educational activities is a vast one and allows the existence of a multitude of possibilities for organizing and carrying out activities, respectively delivering the educational services offered by the school. The various forms of organization can be combined in a flexible way, which supports the successful implementation of instructional-educational activities and the fulfilment of the objectives that are of interest to the direct beneficiaries (students).

Considering the criterion of the weight of the activity (Bocoș & Jucan, 2019), we can distinguish three main categories of activities that the school can offer as educational services, based on the specialists available in the school and on the collaboration with the community. Thus, the school institution can facilitate the implementation of:

- *Frontal activities* (frontal instructive-educational actions are predominant), in the form of lessons, activities in laboratories/workshops/school offices, activities in sports spaces (sports halls/fields), visits and excursions for didactic purposes, viewings and analyses of artistic performances.

- *Group activities* (group instructional-educational actions are predominant), in the form of school circles organized and carried out in a monodisciplinary or interdisciplinary manner (by reference to the education framework plan for each individual education cycle), consultations with a remedial, recovery, stimulation or development purpose, study visits carried out in small groups, school competitions, debate sessions/scientific communications/reports, editing school magazines, meetings with people of culture/scientists/writers/specialists in various fields, etc.

- *Individual activities* (individual instructive-educational actions are predominant), in the form of study in the library, additional/supplementary readings, independent research, carrying out practical-applicative and experimental works, solving exercises/problems/scenarios, elaboration of projects, defending scientific communications, etc.

We have analysed the essence and specific elements of educational services, capitalizing on some theoretical foundations from the specialized literature related to the curriculum. Starting from the general idea that this ”refers to the educational offer of the school and represents the system of direct and indirect learning experiences offered to the educated and experienced by them in formal, non-formal, and informal contexts” (Bocoș & Jucan, 2019, p. 33), we emphasize that the curricular offer is subject to periodic transformations, restructuring, and reorganization. The educational services and the school curriculum should follow at least one of the recent trends/innovations in curriculum development, namely flexibility. A modern, student-centred, adaptive, and flexible curriculum is one that is accessible to students, one which offers them ”the possibility of choosing a field of interest, and allows teachers to make the didactic approach more flexible in order to be better adapted to the different classes of students” (Albulescu, 2024, p. 69), and thus permitting a reconsideration of the manner in which they teach school subjects, consequently leading to an increase in the quality of services and educational products delivered.

Formal education transcends the limits of national requirements and values and tends towards

universality, accessing and respecting a valuable heritage common to humanity. As such, the school must further develop its curricular offer and the range of services and educational products it delivers, as it is increasingly evident that a unitary curriculum, even if it is flexible, can no longer respond to diversity alone (Jucan & Ungurășan, 2022).

In addition to the subjects included in the Educational Framework Plans and in the School-Decided Curriculum, extracurricular activities can be designed and carried out, namely educational events of the non-formal type. These primarily consist of academic, artistic, sports activities that are planned, carried out, and evaluated at the school and class level, outside the hours included in the normal school timetable. Extracurricular activities are forms of organizing educational activity with an interdisciplinary character, led by qualified people, that facilitate the delivery of useful educational services and products to complement the instruction and development provided by formal education.

A separate category of extracurricular activities, with obvious formative values from the perspective of collaborative learning, is that of group extracurricular activities. Extracurricular group activities, as an integral part of the educational services provided by the school, can be carried out either in the educational institutions, but outside the classroom, by the specialized human resource in the school or by other institutions with educational functions (e.g. science clubs, cultural/artistic-plastic/musical circles, choral/instrumental/theatre groups, charitable/greening actions, thematic meetings with outstanding personalities in various fields/specialists), or outside the educational institutions but with the involvement of them or other institutions with educational functions (e.g. study visits, educational trips, thematic activities included in inter-institutional projects, etc.).

The educational services offered by school institutions must facilitate the preparation of students for their integration and adaptation in society and respond to the current and future needs and requirements of the younger generations. Educational contexts and learning/training activities provided through school-based educational services can promote valuable actional and cultural models. Given that educational services and, implicitly, educational activities place an obvious emphasis on socialization among students, it is possible to approach them with some “techniques of interaction and social integration, compatible with certain essential requirements and expectations from the perspective of living in the community and society in general” (Muste & Ungurășan, 2022, p. 307).

In the process of updating the curricular offer and educational services, it is essential to take into account the learning objectives that must be met, the contents that must be transmitted, the means available to the school to provide the educational services, as well as the needs and particularities of the main beneficiaries (students). It is continuously desirable to be aware that educational services are ”activities provided for the benefit of education consumers, with or without their direct participation, with the aim of fulfilling certain needs and producing the intellectual satisfaction of the consumers” (Cebanu, 2020, p. 315).

3. Categories of educational products and goods provided by the school

Educational products can be understood at the theoretical level and at the level of educational practice from the *perspective of the educational offer of the institution or the educator* on one hand and from the *perspective of the result of the educational process* on the other hand (Bocoș et al., 2019). The perspective of the educational offer brings to attention a category of educational products proposed and designed by an educational institution or a specialist in the educational field that can significantly influence the quality of the educational act and the educational services provided by the respective institution or the qualified person (China, 2015, apud Bocoș at al., 2019). The perspective of the result of the educational process (as a whole) refers to a category of educational products that is represented by the graduates of an educational cycle/ an educational programme/ a form of education/ an educational institution

Educational products and goods for students

The educational products offered by the school are developed starting from the principles, vision, and mission of the school and are in close relationship with the educational products provided by the teachers, which are composed primarily of their knowledge and professional training, corresponding to their education/self-education/instruction (which allows them to ensure an appropriate/optimal level of understanding of the content they present). Other elements are added to these, such as the mastered communication techniques and the non-verbal messages expressed (voluntarily or involuntarily) by the teacher through their attitude, gestures, language,

etc., which complete the educational product provided by each individual teacher.

The term educational goods refers to the knowledge, different skills, attitudes, and perspectives that children develop for their own benefit but also for the benefit of others. These educational goods are varied and include, among many others, cognitive abilities, the ability to cooperate with others, and the recognition and appreciation of beauty. In this context, we consider cognitive skills and socio-emotional skills as educational goods because they generate value in the present period for those educated while also contributing to their future, and thus to their overall well-being. These educational goods also benefit others, whose lives are improved by the actions of the educated. The acquired attitudes and perspectives or outlooks that enable and incline the educated individuals to participate in a responsible manner in the democratic process will benefit the individuals themselves, although sometimes they may only benefit other members of their community. In both such cases, they are educational goods, regardless (Brighouse et al., 2016).

In the specialized literature, various perspectives have been put forward regarding the educational products and goods that the school, by its very nature and through its representatives, should provide to the students. A relatively recent view is the one supported by the *theory of educational goods* (Brighouse et al., 2016). This theory posits that there are six capacities that children should develop, and which are seen as educational goods required by the current generations, namely *economic productivity, independence, democratic competence, beneficial personal relationships, the ability to treat others as equals, and individual fulfilment.*

From what was presented previously, we deduce that educational goods also have an immaterial dimension, referring to qualities, attributes, virtues to the formation of which the school has a significant contribution. These are aspects which the school as an institution attempts to further develop in order to provide the students and, consequently, society as a whole everything that is useful and valuable for ensuring continued thriving and well-being.

Educational products and goods for parents

Educational goods consist of knowledge, skills, dispositions and attitudes that exist in people and that have the potential to contribute to their own development and to the enrichment of the lives of others. The term *goods* refers to personal attributes that are positive and which can contribute to valuable outcomes for the individual who possesses them or for other people they may interact with, either now or at any point in the future.

Adults are capable of deliberately influencing the educational goods that children develop simply by how they raise them or how they educate them. The way parents talk to their children, the manner of disciplining them, the degree to which the children are involved in social activities are all just as relevant to the development of educational goods as the experiences children acquire in kindergarten, school, and other formal contexts outside of the family. The educational process begins long before the children ever enter their formal education years and will continue long after they have finished their schooling. Most people will continue to acquire knowledge and skills throughout their lives and, similarly, their beliefs and attitudes are able to change as well (Brighouse et al., 2016).

Naturally, school remains the central focus in the formation of the younger generations as it is designed specifically to produce educational goods at the level of students. Educational institutions specializing in different age levels have the capacity to work with the families of the students and provide parents with informative resources, including parenting advice, helpful perspectives on the stages of child/adolescent/youth development, and recommendations on relevant literature on this topic (Harini et al., 2023). To ensure that the beneficiaries have access to these products, the educational institution or the teacher/specialist can opt for various delivery methods, starting from sessions/meetings with physical presence and direct participation to blogs/web pages/social platforms, which can constitute viable channels for the dissemination of educational content. Providing educational content in this manner can enhance the school's reputation as an educational institution that places great emphasis on both the academic development and the personal fulfillment of its students.

4. Conclusions

Educational practice has generated *directions aimed at optimizing the efficiency* of the educational services provided by the school.

a. Developing a high-performing, fair, and efficient educational approach

Specific objectives:

a.1. Optimizing educational efficiency indicators – promotion rate, school progress and discipline;

a.2. Ensuring a dynamic educational offer in accordance with the needs, interests, and expectations of the beneficiaries;

a.3. Promoting remedial education, facilitating access to education and school inclusion of students from socio-cultural environments with educational risk;

a.4. Capitalizing on the abilities of the students for school performance. Increasing the degree of competitiveness at the level of Olympiads and school competitions.

b. Integrating digital education into current teaching practice

Specific objectives:

b.1. Supporting teachers in the development of digital skills and their application in various educational contexts;

b.2. The integration of OER (open educational resources) in the teaching-learning-evaluation activity;

b.3. Promoting the internal and external educational partnership by capitalizing on digital technology and the virtual environment.

c. *Development of institutional management from the perspective of implementing a learning culture and creating an organization based on effective communication*

Specific objectives:

c.1. Reconsidering, at the level of the mentality of the teaching staff, the role of the educator as the main variable of change in the school environment and facilitator of knowledge/learning for students;

c.2. Focusing the interest of the teachers on providing attractive and motivating school experiences for students;

c.3. Increasing the visibility and educational impact of the school in the community.

We advocate for the fulfillment of these directions for optimizing efficiency through the complementary actions on the three main dimensions, guided by the specific objectives mentioned previously.

Authors note: The authors have equal contributions to this article.

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Boosting Linguistic and Social Skills in Children with Autism: The Impact of the 'Echoes & Parent-Partnered Actions' Therapy Programme

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Boosting Linguistic and Social Skills in Children with Autism: The Impact of the 'Echoes & Parent-Partnered Actions' Therapy Programme

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Abstract

This study explores the efficacy of the 'Echoes & Parent-Partnered Actions' therapy programme in enhancing the linguistic and social competence of children diagnosed with autism spectrum disorder (ASD). By addressing significant challenges in language acquisition, social communication, and ASD-related behaviours, this research fills a crucial gap in effective, tailored language therapy interventions. The methodology employed a quasi-experimental design with pre-test and post-test measures to evaluate progress. Six participants with mild to moderate ASD were purposively selected based on specific criteria and engaged as a single experimental group in a ten-week intervention using the 'Echoes & Parent-Partnered Actions' programme. The results revealed substantial improvements in language comprehension, expressive abilities and social communication skills, as indicated by the post-test scores. These findings underscore the potential of the 'Echoes & Parent-Partnered Actions' programme as a valuable tool in language therapy for children with ASD. The study concludes by recommending the integration of this programme into educational and therapeutic settings and calling for further research to explore its long-term efficacy.

Keywords:
autism, language therapy, communication skills; linguistic competence, intervention

1. Introduction

The challenges faced by parents of children with autism spectrum disorder (ASD), an increasingly recognized developmental disability (Gordon-Lipkin et al., 2016), often serve as a catalyst for research aimed at developing effective interventions. This introduction, while framed from a personal perspective, highlights the urgent need to address the specific difficulties children face in language acquisition, social communication, and the restricted, repetitive, or sensory behaviours characteristic of ASD from early childhood (American Psychiatric Association, 2022). It emphasizes bridging the gap between the diverse needs of children with ASD (Will et al., 2018) and effective scientific solutions, highlighting the need for further studies to challenge current treatment perspectives and address the lack of consensus on the causes and best treatments for ASD (Thayer & Bloomfield, 2021).

Despite the increasing prevalence of ASD diagnoses, the reasons for this rise remain unclear (Yenkoyan et al., 2017). This uncertainty underscores a significant gap in effective, evidence-based language therapy interventions tailored to the diverse needs of the growing population of children with ASD (Safwi, 2023). To address this gap, the 'Echoes & Parent-Partnered Actions' (EPPA) therapy programme has been developed. Building on previous research (Ros-DeMarize et al, 2023 ; You et al, 2024), the programme integrates findings into a unified model that combines linguistic and communication aspects. It aims to enhance language skills through role-playing scenarios with parental involvement, interactive activities for skill reinforcement, and peer interactions to generalize communication skills, with additional feedback and guidance for home practice. Against this backdrop, this study evaluates the effectiveness of the EPPA programme by addressing the research question: *'Does the 'Echoes & Parent-Partnered Actions' therapy programme significantly improve linguistic and communication skills in children with ASD?'* The hypothesis is that participants will show significant improvements in these skills as measured by pre-test and post-test assessments. This study is significant as it has the potential to provide educators and therapists with a practical tool that can be integrated into existing educational frameworks, ultimately enhancing language and communication outcomes for children with ASD.

2. Theoretical foundation

This literature review examines autism spectrum disorder (ASD), focusing on its impact on language acquisition, communication, social interaction, and behaviour. It highlights that language impairments are

a key challenge in ASD, leading to delays in language development and difficulties with verbal and non-verbal communication. These issues can hinder academic and social success, emphasizing the need for effective language therapy programmes to improve the quality of life for individuals with ASD.

2.1. A comprehensive review of autism spectrum disorder (ASD)

Autism spectrum disorder (ASD) is a complex neurodevelopmental disorder marked by a wide range of symptoms and varying severity levels (Bernardini et al., 2014). Originally termed 'autism' by the Swiss psychiatrist Eugen Bleuler in 1911, derived from the Greek 'autos' meaning 'self,' it highlights the inward-focused behaviours and communication challenges that significantly affect language development and social interactions (Centers for Disease Control and Prevention, 2018). Leo Kanner further refined the concept in 1943 by identifying ASD through 'triple impairments' in social interaction, language use, and imaginative play, alongside repetitive behaviours. Today, the term 'spectrum' is used to capture the extensive variability in symptoms, skills, and impairment levels among individuals with ASD, acknowledging how differences in symptom severity and language challenges contribute to their diverse behavioral profiles (Autism Society, 2020).

According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), autism spectrum disorder (ASD) is marked by early deficits in social communication and the presence of restricted and repetitive behaviours (American Psychiatric Association, 2018). This definition underscores the disorder's heterogeneity, reflecting significant variability in intellectual and linguistic abilities among those with ASD. Recent data reveal a concerning rise in prevalence, with up to 1 in 36 children affected and a notably higher incidence among boys (Centers for Disease Control and Prevention, 2018). This gender disparity may result from both biological and diagnostic factors, suggesting a need for refined criteria that consider gender-specific symptom variations. In fact, the etiology of ASD is complex, involving genetic, environmental, and neurological dimensions (Chiang, 2008; Matson & Hess, 2011). Research has identified various genetic mutations and environmental influences contributing to ASD development (Crais et al., 2006; Bölte et al., 2018), while neurological studies show atypical brain development, including structural and connectivity differences (Sotoodeh et al, 2017). Given this complexity, understanding ASD and its associated language impairments—both expressive and receptive—requires a comprehensive approach.

Individuals with ASD may experience considerable challenges in understanding and using language, which can impede social communication and interaction. The severity of these language impairments varies widely, with some individuals facing profound deficits while others retain relatively intact language abilities (Vogindroukas et al., 2021). Diagnosing and intervening in ASD is further complicated, making its treatment challenging (Howes et al., 2018). Accurate differential diagnosis is crucial for effective educational planning and intervention. Integrating theoretical frameworks such as Behaviorism, Innateness, Cognitivism, and Socioculturalism can provide valuable insights and guide strategies to support language development in individuals with ASD (Chomsky, 1957; Piaget, 1930; Vygotsky, 1962). As research continues to advance, incorporating new findings into clinical practice and educational strategies will be essential for addressing the diverse needs of those with ASD, leading to more effective interventions and improved outcomes for individuals across the autism spectrum.

2.2. Personalized language interventions for autism spectrum disorder

Autism spectrum disorder presents distinctive challenges in language and communication, necessitating specialized and tailored interventions. Language therapy programmes, particularly those designed for preschool-aged children, have become essential in addressing these challenges. These programmes, featuring diverse designs and tools, are carefully crafted to enhance communication skills by catering to the unique needs of individuals with ASD (Fang et al., 2023). Guided by the expertise of speech-language pathologists, these interventions begin with meticulous assessments to determine each individual's specific language functioning levels (Law et al., 2003). Early identification and intervention are crucial for effectively addressing speech, language, and communication disorders (Schlosser & Wendt, 2008). Through the collaboration of a multidisciplinary team, these tailored interventions aim to foster significant improvements in communication, ultimately enhancing the quality of life for individuals with ASD.

The advancement of language interventions for ASD has led to the development and refinement of various techniques. Among these, the Prompts for Restructuring Oral Muscular Phonetic Targets

(PROMPT) utilizes touch cues to guide children in producing targeted speech sounds, while the Picture Exchange Communication System (PECS) uses visual aids to facilitate communication (Cagliani et al, 2017). Additionally, methods such as the Treatment and Education of Autistic and Communication Handicapped Children (TEACCH) emphasize adapting environments to support learning in diverse contexts, and the Pivotal Response Treatment (PRT) offers a flexible, cost-effective approach that promotes skill maintenance and generalization (Mohammad Zaheri et al., 2014; Wang et al, 2023). Furthermore, the Hanen Programme empowers parents and caregivers to support their children's linguistic development, enhancing both family dynamics and the child's communication skills (It Takes Two to Talk-The Hanen Programme for Parents (Senent-Capuz et al, 2021). Despite advancements in ASD interventions, there is still a gap in optimizing these strategies to meet the diverse needs of individuals with ASD. In this respect, the current study attempts s to address this gap by refining intervention methods to better cater to individual needs, ultimately enhancing language and communication skills for those with ASD.

3. Research methodology

The study at hand employed a quasi-experimental design to evaluate the effectiveness of the 'Echoes & Parent-Partnered Actions' (EPPA, henceforth), therapy programme in improving linguistic and social competence among children with ASD.

3.1. Sampling and participant selection

This quasi-experimental study used purposive sampling to select six verbal autistic children aged 5 to 9, with mild to moderate autism, including two girls and four boys. The selection criteria aimed for a homogeneous sample, chosen from primary schools for autistic individuals, providing a tailored environment for accurate evaluation and minimizing behavioral disruptions. The criteria focused on a confirmed ASD diagnosis obtained from specialized medical professionals, the ability to communicate at a certain verbal level, and the presence of mild to moderate autism symptoms. These key criteria to a certain extent guaranteed that the sample was well-matched with the programme, minimizing factors that could interfere with measuring the impact of the intervention. The decision to work with a small group was influenced by the study's specific focus, time constraints, and the intensive nature of the intervention. However, while a small sample size allows for detailed, individualized attention, it also limits the generalizability of the findings.

Worthy of mention is that this quasi-experimental study adhered to ethical safeguards to affirm the protection of the participants. Informed consent, using clear accessible Arabic language, was obtained from the parents or legal guardians of all participants, certifying that they were fully aware of the study's aims, procedures, potential risks, and benefits.

3.2. The intervention process

The methodology was structured around four key components: the intervention, the pre-test, the treatment process, and the post-test.

a. *Intervention:* The 'EPPA' is a ten-week language therapy intervention designed to enhance the linguistic and social communication skills of children with ASD. The programme (Table 1) includes twice-weekly, one-hour sessions conducted in a quiet, distraction-free environment to ensure focus and engagement.

Table 1.
Programme design

Timing	Session structure
10 minutes	**1. Introduction**
	Welcome & warm up -a brief welcome and warm-up activity to help the child transition smoothly into the therapy setting. This includes simple language games or a quick review of previously learned skills to prepare the child for the session ahead.
20 minutes	**2. Role-playing scenarios**
	__*Guided role-play:* Structured role-playing scenarios are introduced, simulating real-life interactions. These scenarios are designed to practice specific language skills, such as asking questions, making requests, or expressing emotions. __ *Parental involvement:* Parents are actively involved in the role-playing exercises, guided by the therapist. They help reinforce the child's language use and implement strategies such as verbal prompts, visual aids, and gestures.
15 minutes	**3. Skill reinforcement**
	__ *Interactive activities:* The session continues with activities that reinforce the language skills practiced. This may include games, storytelling, or problem-solving tasks that encourage the child to use newly acquired skills in varied contexts.

	__*Expert feedback:* The therapist provides immediate feedback and support to both the child and parents, making adjustments as needed to address any challenges or reinforce effective techniques.
10 minutes	**4. Peer interaction**
	__*Peer play:* When possible, the child engages in structured peer interactions to practice communication skills in a social context. This helps in generalizing skills to real-world situations and promoting social engagement.
5 minutes	**5. Wrap up & review**
	__*Summary and homework:* The session concludes with a review of the day's activities and a summary of progress. Parents receive guidance on how to reinforce skills at home and may be assigned simple tasks or activities to practice with their child before the next session.

Throughout the sessions, the programme emphasizes a gradual progression from scripted interactions to more complex, spontaneous conversations. The involvement of experts ensures that any difficulties are promptly addressed, and that the intervention is tailored to meet the specific needs of each child. The combination of structured activities, parental participation, and expert guidance creates a supportive and engaging environment aimed at improving linguistic competence, social understanding, and overall confidence.

b. *Pre-test:* Before the intervention, a pre-test was administered to assess the baseline linguistic and communication skills of the participants.

c. *Treatment:* Throughout the ten-week intervention, participants engaged with the programme in regular sessions, guided by trained therapists who provided additional support and reinforcement as needed. The treatment process also included ongoing observations and notes from the therapists, documenting each participant's engagement with the programme and any notable changes in their behaviour or language use.

d. *Post-test:* Following the ten-week intervention, participants underwent a post-test identical to the pre-test to gauge changes in linguistic and social competence after the 'Echoes & Parent-Partnered Actions' therapy programme.

3.3. Key criteria for both tests assessment: Ensuring an unbiased assessment of the target sample's linguistic and communication abilities using a five-point Likert scale, the pre and post-tests include six exercises focusing precisely on the following linguistic and social communication aspects:

1. Linguistic skills:

__ Vocabulary range: assess the target child's receptive vocabulary using the Peabody Picture Vocabulary Test (PPVT), focusing on their understanding of the relationships between linguistic symbols (signifiers) and their meanings (signified).

__Sentence formation: Evaluate the complexity, grammatical accuracy, and variety of sentences the child constructs from picture prompts, with an emphasis on their ability to use reflexive language.

__Articulation and pronunciation: assess the child's articulation, with a focus on specific Arabic pharyngeal sounds, such as the sounds /ʕ/ (ع) and/ ħ/ (ح), that are targeted during the intervention,

2. Social communication skills:

__Turn-taking: observe how well the child can take turns in conversation, both speaking and listening.

__Use of social cues: assess the child's ability to recognize and respond appropriately to social cues, such as facial expressions and gestures, by focusing on whether the child can accurately identify emotions or intentions and respond in a socially appropriate manner.

__Initiation of communication: measure how often and effectively the child initiates conversations or asks questions.

By comparing the results of the pretest and post-test, the effectiveness of the 'Echoes & Parent-Partnered Actions' (EPPA) intervention in improving linguistic and social communication skills can be evaluated.

4. Results

The data gathered from the pre-test and post-test were analyzed using statistical methods to assess the effectiveness of the 'EPPA' therapy programme. The primary analysis involved comparing the mean scores of the pre-test and post-test results, which formed the basis for hypothesis testing.

4.1. Pre-treatment results

This section presents a comparison between the paired sample, assessing the target linguistic and communication aspects.

Table 2.
SPSS output 1: Pre-test performance results

	Vocabulary range	*Sentence formation*	*Articulation and pronunciation*	*Turn-taking*	*Social cues*	*Initiation of communication*
Mean	4.66	0	1.66	2	3.33	2.83
SD	0.5	0	0.28	0	0.57	1.26

The pre-test results (Table 2) for the 'EPPA' therapy programme reveal diverse performance levels across linguistic and social aspects. The experimental group had a mean score of 4.66 for Vocabulary Range, indicating strong and consistent vocabulary skills. Sentence Formation had a mean of 0, showing significant challenges in constructing sentences. Articulation and Pronunciation had a mean of 1.66, suggesting some ability but with limited variation. Turn-Taking had a mean of 2, reflecting consistent but low performance. Social Cues had a mean of 3.33, indicating relatively better skills in recognizing and responding to social cues. Initiation of Communication had a mean of 2.83 with greater variability, showing diverse proficiency levels among participants.

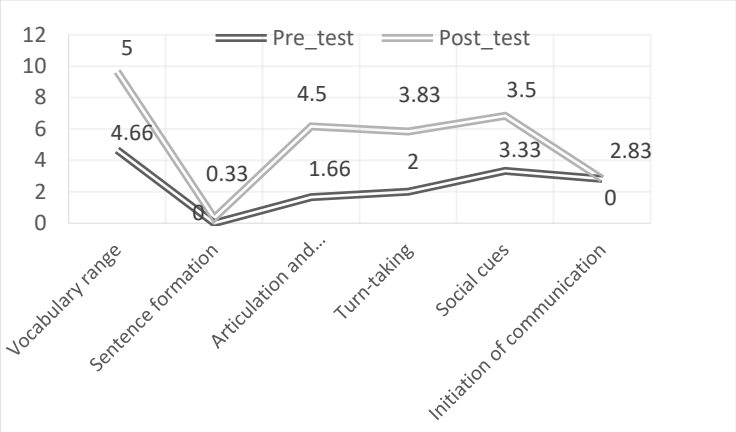
4.2. Post-treatment results

Table 3.
SPSS output 2: Post-test performance results

	Vocabulary Range	*Sentence Formation*	*Articulation and Pronunciation*	*Turn-Taking*	*Social cues*	*Initiation of Communication*
Mean	5	0.33	4.5	3.83	3.5	4.33
SD	0	0.28	0.5	0.57	0.76	0.76

The post-test results (Table 3) for the 'EPPA' therapy programme show significant improvements in several linguistic and social aspects. Vocabulary Range increased to a mean of 5, indicating a substantial gain in vocabulary with consistent performance. Sentence Formation also improved to a mean of 0.33, reflecting progress in constructing sentences. Articulation and Pronunciation saw a notable rise to a mean of 4.5, demonstrating enhanced proficiency. Turn-taking improved to a mean of 3.83, indicating better conversational engagement. Social Cues increased to a mean of 3.5, showing better recognition and response to social cues. Initiation of Communication rose to a mean of 4.33, suggesting a significant boost in initiating conversations.

Figure 1.
Difference in Means



The mean score increased from 2.41 in the pre-test to 3.58 in the post-test, indicating a positive change as a result of the intervention. The p-value of 0.029 is less than the commonly used significance level of 0.05, suggesting that the improvement observed is statistically significant (Table 4). This means that the changes in scores are unlikely to be due to chance, supporting the effectiveness of the 'EPPA' therapy programme in improving the targeted skills over the ten-week period.

Table 4.
Paired samples T-test

Paired samples T-test	**Mean**		**Sig.P value**
	Pre-test	Post-test	0.029
	2.41	3.58	

5. Discussions

The findings of this study offer valuable insights into the effectiveness of the 'EPPA' therapy programme in improving linguistic and social skills among children with ASD. The results are discussed in relation to the research objectives, compared with previous studies, and their implications for both theoretical understanding and practical application are highlighted.

5.1. Effectiveness of the 'echoes & parent-partnered actions' (EPPA) programme

The significant improvements observed in the post-test scores suggest that the 'EPPA' programme is effective in enhancing language and communication skills among children with ASD. These findings align

with previous research that emphasizes the importance of intervention programmes designed to improve language, affective, and interaction skills, often supported by advanced agent technology (Bernardini et al., 2014). For example, the programme' s use of structured role-playing scenarios and parental involvement aligns with narrative-based games and interactive activities shown to be effective in language training, which have evolved from human-assisted 'Wizard of Oz' methods to more sophisticated applications with automatic voice detection (Tartaro & Cassell, 2006). Similarly, the incorporation of visual aids and real-time feedback in the programme reflects strategies used in games like cMotion and LIFEisGAME, which help children recognize and express emotions, thereby improving affective skills (Finkelstein et al, 2009; Abirached et al, 2011). The programme's emphasis on peer interaction and structured play to reinforce interaction skills mirrors the approaches found in collaborative games and social robots, which foster turn-taking and socialization (Barakova et al., 1995). Additionally, the programme's dynamic structure, which allows for expert feedback and real-time adjustments, resonates with the development of autonomous agents in projects like ECHOES, designed to balance pro-activeness, reactivity, and social ability, supporting meaningful social interactions for children with autism (Bernardini et al., 2014; Bosseler & Massaro, 2003).

5.2. Comparison with traditional language therapy

The 'EPPA' intervention distinguishes itself from traditional digital games for children with autism by incorporating direct parental involvement. Research highlights that parent-delivered interventions are successful and necessary (Dickie et al., 2009; Schaaf, 2011). While digital games provide structured, predictable scenarios, this programme emphasizes role-playing and peer interactions in real-life settings. This approach allows children to practice language skills in dynamic, unpredictable contexts. Parental involvement reinforces skills at home, and expert guidance provides real-time adjustments, making the intervention more personalized and adaptable to each child's needs.

In this context, the 'EPPA' programme highlights the importance of tailoring therapy to each child's sensory preferences and cognitive styles. "Echoes" refers to the concept of repeated actions that reinforce learning. By using structured role-playing scenarios, interactive activities, and involving parents, the programme supports an individualized and holistic approach to language therapy. This method combines language skill development with social communication practice, offering a comprehensive tool for enhancing language abilities. Such integration could inform future research on optimizing language interventions for children with ASD.

6. Conclusion, limitations and implications for further research

Practically, the 'Echoes & Parent-Partnered Actions' (EPPA) therapy programme demonstrates an effective approach by integrating various elements to enhance both language skills and social communication, with a focus on the collaborative roles of parents and therapists. While the study's promising findings are noteworthy, they are constrained by the small, non-representative sample and the short-term duration of the intervention. As a result, the findings may not be easily applicable to larger or more diverse populations of children with autism, especially those with varying levels of severity, language abilities, or behavioral characteristics. Additionally, the choice of participants from primary schools dedicated to children with autism helps reduce environmental disruptions but, as it is repeatedly mentioned, limits the applicability of the findings to other settings. These considerations should be given significant attention when interpreting the results and applying them to broader populations. Ergo, future research should involve larger and more diverse samples, as well as longitudinal studies to evaluate the programme's long-term effectiveness in diverse educational and therapeutic settings, especially for practitioners with limited resources. Furthermore, examining its effects on cognitive and emotional development could provide a more comprehensive understanding of its impact.

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The Impact of Cultural Activities on Moral, Intellectual, Aesthetic and Intercultural Education. Case Study

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Abstract

The need to educate the young generation in the spirit of universal, moral-aesthetic and heritage values can sometimes seem in opposition to educating them on the dimensions of liberalism and decision-making independence both personally and socio-professionally. In contemporary society, accepting pluralism and diversity as forms of manifestation in all spheres of our life is a normality, which does not exclude the need for values education. The attachment to values such as: love, truth, respect, responsibility is formed over time as a result of their cultivation, the achievement of a healthy, sustainable education for the world and life. The study aims to investigate/identify the impact of cultural activities on quality moral, intellectual, aesthetic, intercultural education. Not infrequently, cultural practices are perceived as positive or negative, depending on the quality of the activities carried out and the target audience to which they are addressed. The results of the case study show us the responsible involvement of the leadership of the Culture institutions in Bistrița-Năsăud county, Romania, in the realization of quality cultural activities, with a direct impact on the young and adult population in terms of cultivating respect for Romanian cultural values in in general, Transylvanians in particular, of intellectual, moral and aesthetic education. The beneficial impact of the cultural activities carried out at the level of the three culture institutions investigated was due to the promoted cultural marketing and the management of knowledge and quality information.

Keywords:
education, cultural heritage, cultural activities, interculturality, values

1. Introduction

The emergence of a new way of thinking, the valorization of the human role in the age of knowledge, has become an important factor in the development of society based on democratic principles and linked to the technological explosion. The main wealth of every state is the citizen (Mamajonova, 2024). From this it follows that the main way to increase the wealth and power of the state is the formation of an intellectual culture among young people, the preservation of values and the exploitation/valuation of cultural heritage. It can be stated that education and culture are mutually interdependent, complementary and supplementary in all their aspects and activities. Thus, the relationships between education and culture are indissoluble (Kapur, 2018). The intellectual culture of a person means the ability to define the goals and tasks of his epistemological activity based on his mental abilities, planning, abilities to create various intellectual values, the ability to work with sources of knowledge and informational and technical tools (Yusupalieva, 2022). The intellectual development of each individual is dependent on values (moral, universal, family), social and organizational culture (Cucoş, 2003; Cuddy-Keane, 2003; Sanakuiev, 2022; Pedro et al., 2020). Organizational culture significantly influenced intellectual capital and intellectual capital influenced competitive advantage (Indiyati, 2018). Cultural heritage materials can provide rewarding learning opportunities and impactful experiences for students in a variety of disciplines, particularly in the humanities and social sciences (Sweeney & Tanaka, 2022). Accepting heritage as a symbolic construction of social unity and diversity, in which the aspirations and desires of a people are reflected and crystallized, we clearly understand the right of children to use cultural heritage, in all its forms (Nuzzaci, 2020). Moreover, the valorization of cultural heritage resources in children's education expands the possibility of strengthening children's skills profiles and increasing the quality of education. The educational programs carried out in non-formal education institutions (museums, libraries, exhibition halls, Houses of Culture, etc.) or other environments specific to the non-formal (excursions, visits, summer camps, etc.) give students training opportunities in terms of objective attitude and positive emotional-motivational position towards oneself and those around, efficiency and positive feedback in promoting heritage values (Magill et al., 2024; Moisei, 2019).

Also, educational tourism (educational tour being the unifying element between non-formal and formal education) can be used as one of the tools to rediscover and appreciate the significance of cultural heritage (Abo, 2023). As globalization can act to destabilize the moral values of young people (through factors such as television, print media, the Internet, and the prioritization of economic values), moral education has an important role in helping students make sense of the world they live in, and make informed decisions. regarding keeping or giving up certain values, in a given time (Halstead, 2010). Starting from studies that indicate a certain appetite of young people for values such as: acceptance, independence, performance, character and fitness (associated with interest in athletic activities, r =.599) (Hansen, 2021), educational programs for promoting positive values of life in transdisciplinary contexts like PDCA (plan-do-check-act), of flexible learning can offer desirable solutions in acquiring values and achieving a quality education (Albulescu, 2024; Albulescu et al., 2021; Hayati et al., 2024; Liu, 2024).

2. Research methodology

The method used was survey based on questionnaire and interview. The questionnaire developed by us, made up of 17 items (closed questions, of which the first 3 identification ones) was completed in digital or written format on a voluntary basis.

The sample of subjects was made up of the participants in the activities supported between May 2023 and April 2024 by the three cultural institutions within the Bistrița-Năsăud county, respectively the County Cultural Center (CCC), the County Library (CL) and the County Museum Complex (CMC).

The types of activities analyzed, included in the action program of the three institutions, from the point of view of their impact on quality education on intellectual, aesthetic, intercultural and moral dimensions (according to the intended educational purpose) found in tables 1, 2 and 3 constituted sample content.

3. Results

In order to highlight the impact of cultural activities, we will analyze, according to the data in Tables 1, 2 and 3, the degree of achievement of the educational goal by referring to the performance indicators and the number of participants. The number of participants and the degree of achievement of the proposed indicator recorded by the organizers as a result of the self-evaluation of the actions were extracted from the data collection reports.

Table 1.
Educational activities carried out by the County Cultural Center (CCC)

Type of activity	*Educational purpose*	*Performance indicator / Degree of achievement / No. participant*
Scientific manifestations	Supporting new educations based on moral and ethical values, linked with technology	Broad debate and quality scientific information/ 80%/ 160
Festival contest	Achievement of aesthetic, moral, intercultural and patriotic education; Cultivating respect for the culture of the Romanian people	Promoting authentic Romanian folk singing and emphasizing its value dimension/ 90% / 2380
Cultural festival	Inter and multicultural education; Cultivating a taste for beauty	Marking the elements of multiculturalism on the beauty of nature, social relations and/or artistic products/ 660
Actions under the auspices of ”Romanian traditions and cultural values”	Achievement of aesthetic, moral, intercultural and patriotic education; Cultivating respect for the culture of the Romanian people	Creating/offering opportunities in support of information and awareness of authentic values/ 260
Concerts and exhibitions	The achievement of quality education in accordance with the specifics of the culture of the Romanian people on the dimension of moral education	Highlighting good traditional Romanian practices/ 1230

Table 2.
Educational activities carried out by the Museum Complex (CMC)

Type of activity	*Educational purpose*	*Performance indicator / Degree of achievement / No. participant*
Scientific manifestations	Educating young people in the spirit of the values promoted through the new educations	The generation of debate and scientific, social interactions/ 287
Exhibitions	Realization of aesthetic education in a non-formal context; Cultivating	Providing opportunities for a wide mass of the population in

	the taste for beauty; The development of cognitive and socio-emotional skills in the context of supporting total illiteracy	support of information and awareness of authentic Romanian artistic and cultural values; Practicing the elements of cultural literacy, aesthetic exercise/ 8.750
Competitions and festivals	Inter and multicultural education; Intellectual, patriotic, moral-civic education.	The explicit highlighting of the elements of inter and multiculturalism with an emphasis on emphasizing good Romanian cultural-traditional practices / 8.118

Table 3.
Educational activities carried out by the County Library (CL)

Type of activity	*Educational purpose*	*Performance indicator / Degree of achievement / No. participant*
Scientific manifestations	The promotion of new scientific contents on interconnected cultural-literary-artistic and historical dimensions.	Providing scientific information by specialists/artists and providing frameworks for broad debate/ 1.100
Contests, book launches	Realizing intellectual education in non-formal contexts and developing cognitive and socio-emotional skills	Information and knowledge exercises of modern Romanian literary works / 820
Literacy activities	Developing literacy skills and supporting the elimination of functional illiteracy; Cultivating respect for the Romanian language and literature	Practicing literacy skills; Active participation of a large number of students in educational activities during the "Different School" week/ 2.071
Cultural festival; Exhibitions	Aesthetic education (artistic-plastic and literary) by capitalizing on the artistic-literary heritage	Realization of demonstrations, exercises for knowledge and awareness of artistic and literary values /320
Holiday workshops	Quality leisure education	Creation/generation of opportunities for capitalizing on students' aptitude potential/ 200

As it appears from the data contained in Tables 1, 2 and 3, the purpose of each activity was achieved to the greatest extent, and the number of participants was high compared to the target group targeted by the organizers. Therefore, the analysis of the above data shows the positive impact of the activities in the action program of the three institutions that were the subject of the study, both from the perspective of the performance indicators achieved and the number of participants. The arguments for this success, deciphered as a result of the analysis of managerial documents, are in the sphere of effective marketing actions, strategic management and good organization of the planned activities.

In order to create the profile of the consumer of cultural activities (social status/profession, age, non-formal activity attended) we will analyze the data from Table 4.

Table 4.
Profile of the consumer of activities provided by cultural institutions

Identification element	*Categories*	*CCC*	*CMC*	*CL*
Professional status	Pupil/student	14.7%	30.5%	29.4%
	Retired	40%	13.5%	11.6%
	Professor	3.7%	11.5%	18.1%
	Entrepreneur	12.4%	12.5%	9.7%
	Other	28.2%	32%	30.2%
Age	12-18 years	8.2%	13.5%	27.1%
	19-30 years	21.1%	19.7%	13.6%
	31-50 years	31%	57.5%	37.2%
	51-70 years	39.7%	9.3%	22.1%
The activity he participated in	Scientific demonstration	13,3%	14.2%	40%
	Art exhibitions	23.1%	56.6%	8.7%
	Release of a book	4.1%	2.7%	33.3%
	Reading club	0	0	6.6%
	Show/concert/ competition	54.5%	21.8%	3.2%
	Other	5%	4.7%	11.1%

The profile of the consumer of activities carried out by the CCC can be found in the adult age range, mainly after 50 years, with pensioner status (40%) and professions other than teacher, entrepreneur or pupil/student (28.2%) and who prefer the show/concert/ competition (54.5%) or art exhibitions

(23.1%). At the CMC level, the consumer profile is represented by the segment aged between 31-50 years, active population in various fields (32%) and who prefer art exhibitions in proportion of 56.6%. For CL, a profile of consumers positioned in the age segment between 12-18 years (27.1%) and 31-50 years (37.2%), respectively pupils-students (29.4%) or other professions (30.2%) and who they prefer both scientific events (40%) and book launches (33.3%). Corroborating the data from Tables 1-4, we can state that the program proposed by each of the three institutions is based on correct marketing, fair selection of target groups, and the proposals in the activity program are in agreement with the preferences of the respondents participating in the activities.

The answers for the item aimed at specifying the type of education promoted with preference through the cultural activity in which the respondents participated are reflected in Table 5.

Table 5.
Frequency of type of education

The type of education	*CCC*	*CMC*	*CL*
moral	0%	6.3%	6.7%
aesthetics	23.1%	36.5%	5.3%
intellectual	15.4%	29.4%	60.2%
cultural/intercultural	46.2%	23.5%	20.3%
patriot	15.4%	4.3%	3.5%
religious	0%	0%	0%

From the analysis of the data above, it emerges that we have a wide range of types of education appreciated by the respondents as being addressed by the cultural activity they participated in. Thus, at the CCC level, the education carried out predominantly was cultural/intercultural education, the first position at the CMC level is occupied by aesthetic education, while BJ carried out activities centered on intellectual education, which is in agreement with the profile of the respondent and specific to each of the three cultural institutions: CL (scientific manifestations-40% and book launches-33.3%), CMC (art exhibitions-56.6% and show/concert/contest-21.8%), CCC (show/concert/contest-54.5% and exhibitions-23.1%).

Associated with the previous item in Table 6 are presented the answers that mark the degree of contribution of cultural activity in achieving education at a holistic level (moral perspective, aesthetic, intellectual, cultural/intercultural, patriotic, etc.).

Table 6.
The measure of the contribution of the activities of the three institutions to the achievement of education from a holistic perspective (moral, aesthetic, intellectual, cultural/intercultural, patriotic, etc.)

The degree of contribution	*CCC*	*CMC*	*CL*
Very much	53.8%	93.3%	73.3%
A lot	46.2%	6.7%	26.7%
Little bit	0%	0%	0%
Not at all	0%	0%	0%

The data analysis shows that the activities carried out by the CMC are valued as having a very high degree of contribution to the dimension of holistic education (93.3%), the BJ activities ensure for 73.3% of the respondents a very high coverage of holistic education, while the CCC ensures a holistic approach to education by 53.8% to a very large extent and 46.2% to a large extent.

The responses to the questions indicating the interest elicited by the activities participated in by the respondents and the extent to which they corresponded to their needs/interests are shown in Table 7.

Table 7.
Interest and degree of coverage of needs provided by the activities carried out

Interest and degree of coverage of educational and recreational needs	*CCC*	*CMC*	*CL*
Very much	46.2%	100%	66.6%
A lot	53.8%	0%	33.3%
Little bit	0%	0%	0%
Not at all	0%	0%	0%

The analysis of the data shows that the participants in the activities carried out by CMC are very well oriented and choose those activities that are in agreement with their needs, on the one hand, and the activity they participated in challenged them, piqued their interest, on the other hand 100% share, which is remarkable regarding the quality of services and the institution's offer. The fact that at the CL level the interest of the participants and the degree of coverage of needs is 66.6.% - very much and 33.3% a lot, and at the CCC level we have an even lower score of only 46.2% - very much and 53.4% - a lot indicates us the fact that the service offer should be resized/adjusted. At the same time, there is the possibility that the activities in which the respondents participated were not in total agreement with their needs/interests, which cannot be generalized at the level of the entire population, especially since the interests/preferences of the cultural consumer are so different.

Regarding the quality of the activities, this is revealed through items 9, 10 and 11, which indicate the perception of the way of organizing the activity in which the respondents participated (Table 8), the appreciation of the contribution of the activities carried out to the promotion of authentic cultural and/or universal values (Table 9) and the usefulness of cultural activities in the economy of Romanian social life - mental comfort, well-being, security of preserving national identity (Table 10).

Table 8.
Quality of activities from an organizational point of view

Activity organisation	*CCC*	*CMC*	*CL*
Very good	76.8%	87.5%	66.6%
Good	20.8%	12.5%	33.3%
Satisfying	2.4%	0%	0%
Low	0%	0%	0%

Table 9.
Appreciation of the degree of promotion of values through cultural activities

Promotion of values	*CCC*	*CM*	*CL*
Very much	73.8%	100%	70%
A lot	18.5.2%	0%	23.3%
Little bit	7.7%	0%	0%
Not at all	0%	0%	0%

Table 10.
Perceptions on the usefulness of cultural activities in the economy of Romanian social life

The utility of cultural activities in the economy of Romanian social life	*CCC*	*CMC*	*CL*
Very much	79.2%	87.5%	73.3%
A lot	13.1%	12.5%	26.7%
Little bit	7.7%	0%	0%
Not at all	0%	0%	0%

From the analysis of the data presented in Tables 8, 9 and 10 regarding the quality of the activities carried out by the three cultural institutions, it can be seen that from the point of view of their organization, in the opinion of the participants in the organized actions, one can speak of good management (CCC: 20, 8%; CMC:12.5%; CL: 33.3%) and very good (CMC: 87.5%; CL: 66.6%). What is remarkable is the high score obtained in the promotion of genuine values in proportion of more than 70% at the level of all actions carried out. Also, in the economy of Romanian social life, as benefits as a result of participating in the cultural actions carried out, the respondents indicate a mental comfort, well-being, security of preserving the national identity in a proportion of approx. 73% - 87% as very good.

The indicators regarding the consistency of the information provided through the activities carried out at the level of the three institutions are derived from the analysis of the answers to items 12 (Appreciate the quality/consistency of the information disseminated in the cultural activities carried out) and 13 (To what extent did the activity stimulated your desire for knowledge) and 14 (To what extent did the activity you participated in contribute to clarifications, provision of new information/experiences) recorded in Tables 11, 12 and 13.

Table 11.
Quality/consistency of information disseminated in cultural activities

Quality/consistency of information	*CCC*	*CMC*	*CL*
Very much	31.8%	82.7%	40%
A lot	60.5%	17.3%	60%
Little bit	7.7%	0%	0%
Not at all	0%	0%	0%

Table 12.
The contribution of cultural activities to stimulating the desire for knowledge

Stimulating the desire for knowledge	*CCC*	*CMC*	*CL*
Very much	34.8%	87.5%	40%
A lot	61. 2%	12.5%	53.3%
Little bit	3.9%	0%	6.7%
Not at all	0%	0%	0%

Table 13.
The contribution of cultural activities to the provision of new information/experiences

Providing new information/experiences; clarifications	*CCC*	*CMC*	*CL*
Very much	30.8%	65.5%	40%
A lot	61. 5%	33.1%	60%
Little bit	7.7%	1.4%	0%
Not at all	0%	0%	0%

Analyzing the above data, it results that we have a polarity of answers, so that if for some of the respondents the activities they participated in greatly stimulated their desire for knowledge (CMC: 87.5), for others the desire for knowledge was stimulated a little (CL: 6.7), which indicates an increased level of demand on the part of the culture-consuming public, respectively those who attend the cultural activities provided by CL. From the point of view of new information and experiences, the clarification of some confusing elements in proportion to more than 50%, respectively 65.5%, the activities carried out by the CMC satisfied this need to a very high degree. Also to a large extent, respectively 61.5% and 60% of the

activities carried out by CCC and CL covered the same quality indicator.

In order to emphasize the direct contribution of cultural activities to the cultivation of patriotic feelings and the preservation of national identity, the development of social and communication skills, positive interrelationship, the development of a taste for beauty, harmony and emotional balance, other items were formulated whose answers can be found in Tables 14, 15 and 16.

Table 14.
Contribution to the cultivation of patriotic feelings and the preservation of national identity

Cultivating patriotic feelings	*CCC*	*CMC*	*CL*
Very much	61. 2%	67.5%	52%
A lot	34.8%	32.5%	41.4%
A little	3.9%	0%	0.6%
Not at all	0%	0%	0%

Table 15.
Contribution to the development of social and communication skills

Development of social/relational skills	*CCC*	*CMC*	*CL*
Very much	34.8%	77.3%	83.3%
A lot	61. 2%	23.4%	20. 6%
A little	3.9%	9.3%	1.1%
Not at all	0	0%	0%

Table 16.
The degree of taste satisfaction for beauty, harmony and emotional balance

The cultivation of aesthetic taste	*CCC*	*CMC*	*CL*
Very much	73.2%	87.5%	53.3%
A lot	21.8%	12.5%	40%
A little	0%	0%	6.7%
Not at all	0%	0%	0%

From the interpretation of the data presented in Tables 14, 15 and 16, we find that all three cultural institutions cultivate partisan feelings and contribute through their activities in a very large proportion, over 50%, to the preservation of national identity. The degree of development of social and communication skills is strongly supported by BJ at 83.3% and by CMC at 77.3%, which is not at all surprising given the profile of the two institutions. The degree of satisfaction of the taste for beauty, harmony and emotional balance is ensured to a very large extent by the activities carried out by CMC (87.5%) and CCC (73.2%).

A last item concerned the way in which Romanian cultural values are perceived to be promoted through the activities carried out by the three cultural institutions that were the object of the investigation. The data obtained are shown in Table 17.

Table 17.
Perception of the degree of promotion of Romanian cultural values

The degree of promotion of Romanian cultural values	*CCC*	*CMC*	*CL*
Very much	76.1%	77.5%	62%
A lot	21.8%	12.5%	31.3%
A little	2.1%	10%	6.7%
Not at all	0%	0%	0%

The analysis of the data shows that authentic Romanian values are consistently promoted by all three institutions in a very large proportion of over 60%, which justifies the investment of financial and logistical effort. Of course, the fact that some of the respondents express the opinion that cultural values are promoted a little (between 2.1% and 10%) forces reflection and objectivism, as well as an analysis of values from an intercultural perspective.

4. Discussions

Cultural practices influence the provision of education in different ways, depending on whether the cultural activity practiced is perceived positively or negatively by the respective society (Oduor, et al., 2023). The importance of educating the young generation in the patterns of healthy thinking from a moral, ethical and social point of view is a pressing one, and the need to establish solid relationships between generations, focused on the continuity of traditions, preparation for life through the norms that regulated the lives of young people in the previous decades, represents a opportunity (Moisei, 2019; Manea, 2019). There is an urgent need to recognize cultural, religious and linguistic elements as values, and intercultural policies to aim at cultural inclusion promoted through educational centers and cultural institutions (Escarbajal-Frutos et al., 2019). Romanian society is in a phase of development, characterized by a rejection of individualistic, modern values and respect for the social, community and family values of (post) traditional descent (Sandu et al., 2020). The concept of intellectual humility emphasizes the underlying interpersonal, institutional and cultural value (Porter et al., 2022).

A brief analysis of the material creations of humanity in general, but also of the Romanian people in particular, highlights the situation of the majority of human activities under the rigors of beauty, as well as the constant concern to associate the functional with the aesthetic. In other words, along with other

benchmarks, the aesthetic criterion represented and represents one of the defining coordinates of any material or spiritual creation, both from the perspective of its production and from that of its recognition, acceptance and valorization. Human capital, social capital, cultural capital and structural institutional capital are the four types of capital that form the foundation of the creative economy (Ausat et al., 2023).

6. Conclusions

The study highlighted the fact that cultural institutions can generate knowledge and support quality education on several interconnected levels: intellectual, moral, aesthetic, cultural. At the same time, the positive impact of cultural activities on a significant segment of the population was highlighted with reference to the territorial scale related to the study undertaken (Bistrița-Năsăud county). The very high impact of the cultural activities carried out at the level of the three analyzed institutions was manifested on the following levels: promotion of Romanian cultural values (over 60%), the cultivation of patriotic feelings and the preservation of national identity (over 50%) and the degree of satisfaction of the taste for beauty, harmony and emotional balance (over 50%). It should be noted that, according to the data obtained from the administered questionnaires, the interest in cultural activities is satisfied by a rhythmicity of 1-2 cultural activities in a month, for the duration of 1.5-2h/activity, which is great interest in future projections of cultural programs at the level of the analyzed institutions. It can be appreciated that the orientation of consumer groups of cultural activities is channeled towards the quality of the actions at the expense of their quantity, an element otherwise in total agreement with the technological era crossed.

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Enhancing Science Competence: Evaluating the Effects of Peer Instruction and Conceptual Questions on Theoretical, Axiological, and Applied Knowledge in Physics Education

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Enhancing Science Competence: Evaluating the Effects of Peer Instruction and Conceptual Questions on Theoretical, Axiological, and Applied Knowledge in Physics Education

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Abstract

This study evaluates the impact of the Peer Instruction method combined with Conceptual Questions on students' science competence in physics. The research focused on three components of science competence: theoretical knowledge, axiological knowledge, and applied knowledge. Implemented over the 2023-2024 academic year in three 7th-grade classes, the method showed significant improvements in students' theoretical knowledge and applied knowledge, particularly in solving problem situations and scientific language use. Axiological knowledge, including metacognition and attitude toward physics, improved moderately. Data analysis, including Shapiro-Wilk and Wilcoxon Paired Samples tests, indicated substantial enhancements in academic success and conceptual understanding. The study concludes that Peer Instruction effectively enhances science competence, though challenges remain in evaluating the application of definitions and measurement units. This approach promotes active learning and collaborative problem-solving, beneficial for comprehensive science education.

Keywords:
science competence, theoretical knowledge, axiological knowledge, metacognition, peer instruction, conceptual questions, physics teaching

1. Introduction

In physics teaching, three types of knowledge play crucial roles: theoretical, practical, and attitude-based knowledge. Theoretical knowledge involves understanding the core concepts and principles of physics, as discussed in various scholarly works (Calalb & Dabija, 2024; Rychen & Salganik, 2003). Practical knowledge pertains to the application of theoretical concepts in solving physics problems, emphasizing the importance of utilizing information and communication technologies to enhance the learning process (Oliveira & Bonito, 2023). Attitude-based knowledge focuses on instilling positive character values in students within physics education, such as ethics aspects, discipline, objectivity, and collaboration, as highlighted in the context of developing lifelong learning skills through science education (Simon, 2015). By integrating these three types of knowledge, physics teachers can effectively educate students not only on the subject matter but also on essential life skills and values.

An interactive method of teaching physics aimed at improving students' understanding of concepts in physics by engaging them in active learning is Peer Instruction teaching method developed by Eric Mazur (Crouch & Mazur, 2001). During the lesson, students first think individually about a concept or problem, then discuss their answers in small groups to clarify and deepen their understanding. The method encourages both student-student and teacher-student interaction, where peers explain concepts to one another, fostering in such a way collaborative learning. In middle school, Peer Instruction is applied by integrating these interactive discussions into traditional lectures, allowing students to challenge their preconceptions and develop a stronger grasp of physics concepts. This approach has been shown to significantly enhance conceptual understanding and retention compared to conventional teaching methods (Gjerde & Hagane, 2024).

The Peer Instruction method is employed because it complements rather than replaces traditional face-to-face teaching, incorporating elements of interactivity, group discussions, and class-wide dialogue. This approach allows teachers to receive real-time feedback on students' understanding of new concepts. The method's popularity is largely due to its simplicity. Teachers only are responsible for identifying the set of new terms or concepts that students need to grasp in each lesson and guide class discussions (Milner-Bolotin et al., 2016).

Although the field of physics education research is quite developed, with key competencies, lifelong learning competencies, and research competencies holding an important place, studies show that there is still a gap between theory and school practice, as well as between the requirements of the school curriculum and the actual competency levels of students (Dębowska & Greczyło, 2017; Hernández-Suárez et al., 2020). These research results indicate that, from the students' perspective, teachers possess knowledge of their subject matter. However, there are concerns about the extent to which teachers are actively monitoring and improving their pedagogical practices, particularly in areas such as curriculum implementation, instructional methods, and assessment strategies.

It is important to note that the literature includes studies on the methods and scales for evaluating competencies within science education (Chang et al., 2011) as well as on the levels of specific science process skills (Hodosyová et al., 2015). However, a comprehensive assessment of science competence requires a more nuanced approach that considers not only the procedural skills but also the underlying the components that contribute to a well-rounded competence of applying theoretical knowledge. These components can be broadly categorized into theoretical knowledge, which encompasses the foundational principles and concepts of science; applied knowledge, which focuses on the practical application of these principles in real-world scenarios; and axiological knowledge, which addresses the ethical and value-based considerations inherent in scientific inquiry. Evaluating all three dimensions is essential for a holistic understanding of science competence. Thus, in this paper we will examine how to assess the development of the three components of competencies: a) theoretical knowledge; b) applied knowledge; and c) axiological knowledge.

2. Research objectives

The main objective of this research is to evaluate the impact of applying the Peer Instruction method, combined with Conceptual Questions, on the three components of Science Competence: a) theoretical knowledge, assessed through summative test results; b) axiological knowledge, evaluated through two components—metacognition and attitude; and c) applied knowledge, analyzed across five sub-components—application of definitions, measurement units, formulas, skills for solving problem situations, and the use of scientific language.

2.1. Research Questions

Q_1: How do Peer Instruction and Conceptual Questions influence the components of axiological knowledge?

Q_2: What is the impact of Peer Instruction and Conceptual Questions on theoretical knowledge?

Q_3: Which sub-components of Science Competence are most strongly influenced by the Peer Instruction method combined with Conceptual Questions?

2.2. Research hypotheses

H_1: Peer Instruction and Conceptual Questions have a significant positive influence on the components of axiological knowledge, particularly in enhancing metacognition and shaping students' attitudes.

H_2: The use of Peer Instruction and Conceptual Questions significantly improves students' theoretical knowledge, as evidenced by higher performance on summative assessments.

H_3: Among the sub-components of Science Competence, the application of definitions, skills for solving problem situations, and the use of scientific language are most strongly influenced by the Peer Instruction method combined with Conceptual Questions.

3. Methodology

The experiment took place throughout the 2023-2024 academic year at the "Mihai Eminescu" Theoretical High School in Ungheni municipality, Republic of Moldova. Three 7th grade classes, with a total of 110 students (55 boys and 55 girls), participated. The Peer Instruction method (Crouch & Mazur, 2001; Rivadeneira & Esteban, 2023) was applied to all the physics lessons (except for the labs and summative assessment lessons at the end of each chapter) in these three classes, using two to three Conceptual Questions (McColgan et al., 2017) as a means of formative assessment in each lesson. The Conceptual Questions were designed to elicit students' understanding of the main concepts of the lesson, also known as the Big Scientific Ideas (Harlen, 2010), and were linked to the cognitive objectives of the lesson. Thus, we can build a logical chain: Cognitive Objectives – Big Scientific Ideas – Conceptual Questions.

Let us provide an example of Conceptual Question for the chapter "Rotational Balance. Simple Mechanisms" in 7th grade physics course.

Conceptual Question: If a lever has a force arm of 2 meters and a load arm of 1 meter, what happens to the force needed to lift a load compared to the applied force?

A. The required force is twice the applied force.

B. The required force is half the applied force.

C. The required force is equal to the applied force.

D. The required force is not dependent on the length of the lever arm.

Correct Answer: B. The required force is half the applied force.

Depending on how many conceptual questions we have, we divide the lesson into as many sequences. Each lesson sequence is structured as follows in the Tab.1.

Table 1.
Structure of the Lesson Sequence within Peer Instruction Method

Phase	Duration	Actions
Introduction	5 min	The teacher introduces one of the lesson's main concepts.
Conceptual Question	½ - 1 min	A thought-provoking question related to the topic is posed to the students. The conceptual questions are items with four to five answer options, they are qualitative which they do not require a mathematical calculation.
Individual Thinking	1 min	Students first think about the question individually and vote.
First polling	-	Students vote. The teacher does not provide the correct answer after the voting results are displayed.
Peer Discussion	2 min	Students discuss their answers in pairs, explaining their reasoning and challenging each other's understanding.
Second polling	-	Students vote. The teacher shows the correct answer after the voting results are displayed.
Clarification	2 min	The teacher facilitates a class-wide discussion where students share their group findings and explanations. The teacher clarifies any misunderstandings and reinforces the correct concepts.
Re-assessment	4 min	A follow-up question or problem is given to assess the students' understanding after the discussion and clarification

To assess the impact of the Peer Instruction method on the development of lifelong learning skills, these skills were structured into three components: theoretical knowledge, conditional knowledge, and applied knowledge (Valleriani, 2017).

For evaluating theoretical knowledge, summative evaluation results were utilized. The pre-test consisted of results from the first chapter of the 7th grade physics course, "Motion and Rest," while the post-test used results from the final chapter, "Rotational Balance. Simple Mechanisms." The evaluation tests were developed in accordance with the "Reference for the Evaluation of Specific Competences Trained for Students," approved by the Ministry of Education and Research of the Republic of Moldova (Bucun et al., 2014).

Conditional knowledge, which encompasses metacognition and attitude (Avargil et al., 2018), was assessed through pre-tests and post-tests administered at the beginning and end of the school year. The same questionnaire from the authors' previous research (Calalb & Dabija, 2024) was used. In terms of metacognition, three components were evaluated: a) cognitive knowledge—students' understanding of the procedures and strategies they employ in their learning; b) cognitive regulation—monitoring and regulating their own learning; and c) the application of metacognitive strategies—the deliberate selection and use of various learning procedures and strategies based on the cognitive task. Regarding attitude, or axiological knowledge, the assessment was structured into three components: a) the actual attitude; b) students' core values in their physics learning process; and c) adherence to ethical principles in learning physics.

4. Results

To evaluate applied knowledge, students' responses to practical questions from the summative

assessments were analyzed (Etkina et al., 2006; Shtaltovna, 2021). Three representative types of student work were selected for this analysis: works from students who performed well (PLUS), at an average level (AVERAGE), and poorly (MINUS) (Skrabankova et al., 2020).

Table 2.
Descriptive Statistics for Metacognition, Attitude and Academic Success

	Metacognition				Attitude				Academic success			
	Pre-test		Post-test		Pre-test		Post-test		Pre-test		Post-test	
	B	F	B	F	B	F	B	F	B	F	B	F
Valid	55	55	55	55	55	55	55	55	55	55	55	55
Median	3.100	3.100	3.300	3.700	3.300	3.600	3.600	3.900	5.000	6.000	7.000	7.000
Mean	3.182	3.262	3.278	3.615	3.395	3.558	3.515	3.698	5.291	5.618	7.436	7.455
Std. Dev.	0.474	0.611	0.671	0.681	0.558	0.551	0.615	0.498	1.843	1.533	1.014	0.978
Shapiro-Wilk	0.970		0.963		0.965		0.961		0.961		0.901	
P-value	0.014		0.004		0.005		0.003		0.003		<0.001	
Minimum	2.300	2.000	1.900	1.900	2.300	2.700	2.300	2.700	2.000	2.000	5.000	5.000
Maximum	4.300	4.900	4.400	4.600	4.700	4.700	4.700	4.700	10.00	10.00	10.00	10.00
Sum	175.0	179.4	180.3	198.8	186.7	195.7	193.3	203.4	291.0	309.0	409.0	410.0

From Tab. 2 it follows that after one academic year of applying the Peer Instruction method with the use of Conceptual Questions in every physics lesson as a means of formative assessment we obtained: an insignificant increase in the self-perceived level of metacognition in boys of 3.0% and in girls a little higher – 10.8%; an insignificant increase in the attitude towards the physical subject in boys by 3.5% and in girls by 3.9%; a fairly significant increase in academic success in boys by 40.5% and in girls by 32.7%. The increase in post-test results compared with pre-test for Metacognition (MC), Attitude (A) and Academic Success (AS) is presented in Fig. 1.

Figure 1.
Pre-test and post-test results for metacognition, attitude and academic success

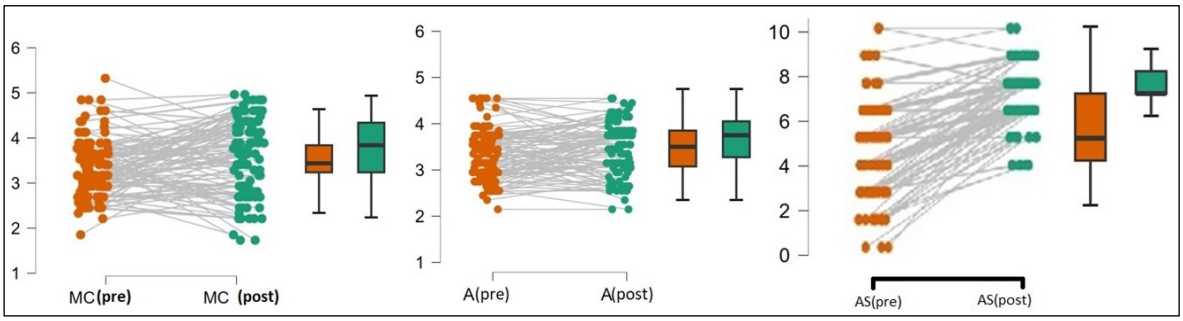
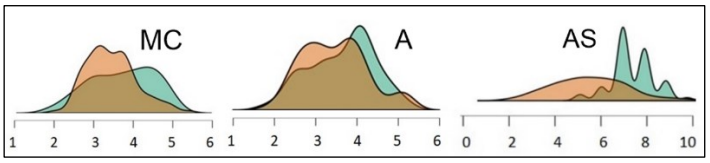


Figure 2.
Non-Gaussian nature of the distribution curves for metacognition, attitude and academic success (brown – pre-test; green – post-test)



The Shapiro-Wilk test results for the benchmark p-value across all pre- and post-test data sets yield values significantly lower than 0.05, indicating that the data do not follow a normal, Gaussian distribution. This conclusion is further supported by the distribution curves for the level of metacognition, attitude and academic success in the pre- and post-tests shown in Fig. 2.

Additionally, as seen in Table 2, the mean and median values do not coincide, further confirming the absence of a normal distribution. Given these findings, we will proceed with the Wilcoxon Paired Samples Test, with the results presented in Table 3.

From Tab. 3 it follows that the positive values, far from zero, of z already show that the null hypothesis about the non-existence of the effect of the Peer Instruction method with the use of Conceptual Questions on the level of metacognition, attitude and

academic success does not take place. Peer Instruction has the greatest effect on academic achievement (z=6.408), followed by metacognition (z=2.920) and attitude (z=2.557). This is also confirmed by the significance level of p values. Thus, there is a highly significant difference (increase) between the results for academic success post-test compared to pre-test ($p<0.001$), and a significant difference (increase) between post-test versus pre-test levels of metacognition and attitude ($0.001 \leq p \leq 0.005$). Also, in the case of pre-test and post-test data pairs for academic success we have a large effect size in both Student and Wilcoxon tests (ES(S) =0.789, ES(W)=0.778), we see a significant influence of Peer Instruction method on metacognition (ES(S)=0.298, ES(W)=0.328) and a moderate influence – on attitude (ES(S)=0.211, ES(W)=0.299). Finally, the obtained standard error values SE ES of 0.11 or 0.12 indicate a precise estimate of the effect size. Thus, we can state that the confidence interval for the effect size is about 95%, we have a low variability of the data, their statistical analysis makes sense, and the results of this analysis are reliable, relevant and conclusive.

Table 3.
Paired Samples T-Test

Pre-test		Post-test	Test	Statistic	z	df	p	ES	SE ES
Metacognition	–	Metacognition	Student	3.130			0.001	0.298	0.117
			Wilcoxon	3696.0	2.920	109	0.002	0.328	0.112
Attitude	–	Attitude	Student	2.213			0.014	0.211	0.106
			Wilcoxon	3087.0	2.557	109	0.005	0.299	0.116
Academic success	–	Academic success	Student	8.276			<0.001	0.789	0.121
			Wilcoxon	3640.0	6.408	109	<0.001	0.778	0.121

To assess the impact of the Peer Instruction method on students' Science Competence, we divided this competence into five components:1) knowledge of definitions and ability to provide correct examples (DEFINITION); 2) correct use of units of measurement (UNITS); 3) accurate application of calculation formulas when solving problems of medium difficulty (FORMULA); 4) understanding and resolving problem situations (SITUATION); and 5) use of correct and coherent scientific language (LANGUAGE). These sub-competences can be found in the Science Competences of the OECD: a) explains phenomena scientifically; b) interprets critically scientific data; c) uses scientific information for decision making (OECD, 2023). The results of the analysis of students' pre-test and post-test summative evaluation papers are presented in Table 4.

Table 4.
Descriptive statistics for components of Science Competence

	DEFINITION		UNITS		FORMULA		SITUATION		LANGUAGE	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Valid	110	110	110	110	110	110	110	110	110	110
Sum	33	40	88	90	55	58	33	70	22	60
Shapiro-Wilk	0.575	0.609	0.490	0.469	0.636	0.635	0.575	0.609	0.490	0.633
P-value	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001

As shown in Table 4, the most significant impact of applying the Peer Instruction method in our study was on students' ability to understand and solve problem situations (a significant increase from 33 to 70 students) and their use of correct and coherent scientific language (a significant increase from 22 to 60 students). We also observe that, after a year of using the Peer Instruction method, the number of students who could apply theory to solve problems of medium difficulty or use units of measurement correctly did not increase. This is likely due to a saturation effect: approximately half of the students could already solve problems of medium difficulty independently, and about 90% had already mastered the correct understanding, transformation, and use of measurement units.

The results of the Shapiro-Wilk test in Table 4 indicate that the data does not follow a normal distribution. One possible explanation is that we scored all five components of scientific competence on a 0-1 scale (where the student either possesses the

competence or does not). Another reason could be the increased variability in student responses—even when assigned the same score, no two papers are identical.

Further we proceed to calculate Cronbach's alpha coefficient for two time points (pre-test and post-test) for the mentioned five components of Science Competence (see Tab. 5).

Table 5.
Reliability statistics for components of Science Competence

		DEFINITION	UNITS	FORMULA	SITUATION	LANGUAGE
Cronbach's α	Pre-test	0.760	0.903	0.850	0.760	0.813
	Post-test	0.830	0.906	0.802	0.824	0.786
Item-rest correlation	Pre-test	0.892	0.306	0.586	0.892	0.720
	Post-test	0.706	0.333	0.804	0.725	0.860

From Tab. 5 results that as the values of Cronbach's alpha are in the range 0.7 – 0.9, all the chosen components are coherent with each other, i.e. they describe the same construct – Science Competence. Moreover, in the case of the pre-test, the values for the Definition and Situation sub-competencies being equal to each other, this means that these two sub-competencies are perfectly correlated with each other: students who manage to illustrate with their own examples the learned definitions also manage to solve a problem situation independently. High Cronbach's alpha values for the sub-components UNITS, FORMULA and LANGUAGE show that they are measured with a higher degree of objectivity, the measurement results being more reliable. Indeed, the correct application of the formula or units of measurement does not give the student as many correct options as the interpretation of a definition. Also, the increase of alpha to three parameters out of five shows that the Peer Instruction method not only increased Science Competence but also increased the internal consistency between sub-competencies. This fact may suggest that the Peer Instruction method contributed to greater clarity or coherence in students' Science Competence.

To evaluate how effectively the questions (items) in the summative assessment tests highlight the sub-components of Science Competence, we conducted an item-rest correlation analysis. On one hand, the low correlation results of 0.306 in the pre-test and 0.333 in the post-test for the ability to apply and convert units of measurement (UNITS) suggest that the current method may not effectively assess students' knowledge, understanding, and application of measurement units. Consequently, further research should focus on improving this aspect of competence, as a strong grasp of units of measurement is crucial for students' conceptual understanding of physics.

On the other hand, the fact that the majority of students (approximately 90 out of 110) correctly answered the items related to the knowledge and application of measurement units indicates low variability in the data for this sub-competence. In other words, the current form of this component of Science Competence does not provide a meaningful contribution to the overall assessment. To increase its relevance, the items related to units of measurement should be made less accessible in the summative tests by increasing their level of difficulty.

5. Discussion of results and conclusions

Impact on Axiological Knowledge: The results suggest that the Peer Instruction method applied during one academic year in 7th grade physics course positively influenced students' axiological knowledge. This is evidenced by the increase in self-perceived metacognition levels in boys 3% and girls 10%. The level of attitude toward physics increased in boys 3.5% and girls 3.9%. Thus, the hypothesis H_1 is confirmed partially – no significant increase was obtained.

Impact on Theoretical Knowledge: The Peer Instruction method led to a substantial improvement in students' theoretical knowledge, as demonstrated by the significant increase in academic success for both boys 40% and girls 32.7%. The rise in post-test results indicates that this method effectively enhances students' understanding of physics concepts. Thus, the hypothesis H_2 is confirmed completely.

Analysis of Applied Knowledge: The method showed a significant impact on students' applied knowledge, particularly in their ability to solve problem situations (practically doubled the number of students who can solve problem situations) and use coherently scientific language (increased three times). The number of students demonstrating proficiency in these areas increased notably (about half of student

sample), reflecting the effectiveness of Peer Instruction in developing practical science skills.

Sub-components of Science Competence: Among the five sub-components of Science Competence, the most significant improvements were observed in students' abilities to solve problem situations and use correct scientific language. This suggests that Peer Instruction is particularly effective in enhancing these specific skills.

Limitations in Knowledge of Definitions and Units: Despite the overall success, the method showed limited impact on students' ability to apply definitions and measurement units. This could be due to a saturation effect, where a significant portion of students had already mastered these skills, leaving little room for noticeable improvement. Thus, the hypothesis H_3 is confirmed partially.

Non-Normal Distribution of Data: The analysis revealed that the data did not follow a normal distribution, as indicated by the Shapiro-Wilk test results. This non-Gaussian distribution suggests variability in students' responses, which could be attributed to differences in individual learning styles or the binary scoring method used.

Internal Consistency of Science Competence Components: High Cronbach's alpha values indicate relatively high internal consistency among the sub-components of Science Competence. Also increased values for item-test correlation speak about the reliability of the used model with five sub-components of Science Competence: DEFINITION, UNITS, FORMULA, SITUATION and LANGUAGE This suggests that the Peer Instruction method not only enhanced overall competence but also fostered greater coherence and clarity in students' understanding.

Reliability of Measurement: The high reliability scores for the sub-components related to application of formulas, work with units, and use of scientific language indicate that these aspects of science competence are measured with greater objectivity. However, the low item-rest correlation for UNITS highlights a potential weakness in the assessment of this sub-component. For future assessments, only items that clearly differentiate between students and show us different levels of proficiency should be used. Thus, increasing the difficulty level of related items could provide a more accurate measure of students' competence in this area.

Overall Effectiveness of Peer Instruction: The study confirms that the Peer Instruction method, when students analyze and discuss Conceptual Questions, is a highly effective approach for improving various aspects of Science Competence, particularly in: fostering theoretical knowledge, enhancing the use of scientific language, and strengthening the skills for solving problem situations.

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The Limitations of the Common Approach and the Educational Value of Teacher Observation

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The Limitations of the Common Approach and the Educational Value of Teacher Observation

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Abstract

The aim of this paper is twofold. In the first part it engages in a critical examination of the common mode of approach to teacher observation from a pedagogical and psychological point of view to determine whether it is suited to the task of teacher training. Our contention is that it is not for it is vitiated by four fundamental limitations which deprive it of any educational value. So, in the second part of the paper it deals with the question whether teacher observation could be reformed, or if it should be abandoned. To answer this question the paper examines the pedagogical benefits of another mode of doing observation, employed in the field of academic development, and it argues that it should be taken as basis for a new model of approach to teacher observation.

Keywords:
teacher observation, teacher training, limitations of guided observation, pedagogical benefits of free observation, selective attention

1. Introduction: Teacher Observation in Historical Perspective

Teacher observation, also called "(high-)school observation" or "observatory practice", has been for more than a century one of the main instruments of teacher training around the globe and all this time, it seems (as the literature on this topic is lacking), it was done mainly just one way, derived directly from the task it is supposed to fulfill. The aim of teacher observation is to offer students the opportunity to learn to teach from another teacher's experience. So, students were asked to attend an experienced teachers' class for several periods armed with observation protocols meant to draw their attention to those aspects of the teaching performance they ought to take up and emulate in the future.

The number of periods to attend, how the observation protocol is structured, what is to be observed, if the things observed should also be evaluated or not, whether this evaluation is to be backed by examples from class and when will all these be done (during the class observed, right after, or at the end of the semester) – all these vary throughout time and from state to state. In fact, they sometimes vary from university to university and even within the same university from instructor to instructor and from one year to another. But the general mode of approach to observation has always been the same.

This is attested by two guides to teacher observation published more than a century ago in the United States respectively Great Britain by Guy Montrose Whipple (1908), one of the pioneers of educational psychology, and William Chandler Bagley (1908). Whipple (1908) and Bagley's (1908) guides are much more comprehensive than the protocols in use today, as they are focused not solely on the performance of the teacher. Whipple's guide (1908), for instance, is concerned with all significant aspects of school life on all five levels on which it unfolds: (i) pedagogical (concerning the curriculum, the general organization of teaching, and the school schedule); (ii) psychological (regarding student personality, temperament, attention level and interest for what is taught); (iii) moral (dealing with how discipline is enforced and maintained); (iv) sanitary (concerning the hygienic conditions in the school) and, finally, (v) didactic (regarding how classes are taught). In his turn, Bagley's guide (1908), which was published as an appendix to a treatise on classroom management, is also concerned with corresponding issues such as the general tone of the class, students' level of attention, class routines and discipline, students and teacher's mood and class hygiene. Conceived in this way, Whipple (1908) and Bagley's (1908) guides contain valuable suggestions for improving current programs of teacher observation. But, when it comes to the actual practice of observation, they do not stray away from the general

mode of approach common in our times. Just like the observation protocols in use today, Whipple (1908) and Bagley's (1908) guides rely on long series of questions (Whipple) or questions and prompts (Bagley) meant to draw students' attention to those aspects of the teaching performance considered important.

The longevity of this general mode of approach is surprising in itself. In the academia there are not many things done today as they were done one hundred years ago. But even more surprising is that for all this time this mode of approach to teacher observation has not been subjected to scrutiny to see whether it has any didactic value or not. So far no one seems to have asked whether it can actually fulfill its educational task.

The present paper wants to correct this situation. In the first part we will subject the common approach to teacher observation to a critical analysis from a pedagogical and psychological point of view and we will show that it is vitiated by four limitations which hinder its didactic efficacy. Our analysis will show that, due to the very way it is constituted, teacher observation has no real educational value and can only have a marginal contribution to student teachers' training.

This conclusion rises an unavoidable question. Insofar as the limitations discovered and constitutive to the way observation is commonly approached then, by definition, it cannot be corrected and improved. So, should we keep using teacher observation, or should we abandon it?

This question will be the object of the second part of our paper. There we will show that teacher observation as such need not be abandoned. What needs to be abandoned is the common approach to it based on guided observation. If one renounces this long used approach, teacher observation exhibits multiple pedagogical benefits which attest its value as tool for teacher training.

2. The Limitations of the Common Approach to Teacher Observation

By being simply derived from the task of teacher observation, the didactic efficacy of the common approach to it in both its present and century old iteration seems self-evident. Yet, on closer examination this evidence disappears, and it turns out to be vitiated by a host of problems. Let's tackle them in order.

First off, insofar as it relies on lists of questions – as do Whipple (1908) and Bagley's (1908) guides – or observation items (like the protocols in use today) drawing attention to certain aspects of the teaching performance, the common approach reduces observation to a process of acquaintance with the teaching activity, of no real help for understanding what is happening in class. Students are simply invited to note whether the teacher does what the observation protocol deems important or not, with no concern for the reasons behind her actions or their didactic implications. But precisely this, an understanding of the teachers' actions would enable students to emulate them.

To see the depth of the problem, let's take first some examples from Whipple (1908) and Bagley's (1908) guides. Whipple (1908), for instance, advises students to ask themselves during observation a series of questions concerning the types of activities and the methods used. Did the teacher lecture? Have the students been involved in recitation or drill? Have they been quizzed orally or in writing? Has the teacher resorted a heuristic approach? Has she used inductive or deductive reasoning (Whipple, 1908, p. 9)? In his turn, Bagley (1908) prompts students to pay attention to the sorts of questions employed by the teacher observed. Where they „broad and general or specific and pointed" (Bagley, 1908, p. 289)? But knowing that a teacher has resorted to a certain activity and a specific method for a particular lesson; or knowing that a teacher has approached a subject with broad questions means neither that someone else should, nor that it could do the same. Certain activities might be engaging for certain students and boring to others. The successful use of heuristic methods requires familiarity with the class taught, for, without it, the problems posed might be too difficult or too easy, and students will not be motivated to search for a solution. Broad questions can be conductive of learning just as much as pointed ones. What matters is the context in which they are posed and who they are addressed to. Knowledge of what a teacher has done in a certain period has no real educational value for a student teacher. It gains educational value only insofar as it is accompanied by a clear understanding of the reasons why the teacher chose to do what she did, why she chose the activities, methods, or types of questions she employed. But the common approach to teacher observation is of no help in this regard.

In the same vein, an observation protocol in use in Romania today prompts students to record whether the teacher uses enthymematic, generalizing, cause and

effect, or comparative arguments in class (Secrieru, 2007, p. 17)? But, again, if a teacher resorts to a particular type of argument to defend an idea, this does not mean either that it could not be defended otherwise or that the type of argument used is preferable to others.

Or, to take just one more example, another Romanian observation protocol demands to take note if the teacher manifests "distributed attention" and "pedagogic tact" and to measure them on a scale from "insufficient" to "very good" (Pop-Cîmpean, n.d.). But obviously, noticing these qualities in someone does not cultivate them in yourself. Such observation items are simply pointless.

Second of all, the common approach to teacher observation reduces the class, dynamic and multimodal par excellence, to a static perceptive image of no real use for learning to teach. A class is the product a long series of interactions: 1) the teacher's interaction with the educational content to be taught, with the didactic materials and tools, with the lesson plan, with her students taken individually and with the class as a whole; 2) students' interaction with the teacher and the educational content taught, with the didactic tools and materials used by the teacher as well as with those reserved for themselves (notebooks, writing instruments, calculators, tablets, books, maps, dictionaries and so on); 3) the interactions between students during team work and those prohibited, appearing when they ought to pay attention or work alone; 4) the interaction between students' stock of knowledge and the concepts and theories just learned; 5) the interaction between the worldview of the student, shaped by her family and social milieu, and that transmitted through the teacher by the state, the religious order or the foundation financing the school.

In an approach to teacher observation relying on questions or observation items all these interactions and the whole complexity of their interconnections are condensed in a few "stills" of what has happened in class, independent from one another, that students are expected to record and, sometimes, evaluate on various scales such as that mentioned above from "insufficient" to "very good." Conceived in this way, the observation endeavor erases the ties between the teacher's communication style, her vocabulary, the educational content discussed, and the teaching methods used. And, at the same time, it abolishes the context of teaching, it displaces any possible context, reducing the entire duration of the class to a few moments, those when the things referred to in the observation protocol take place, disregarding the fact that these moments were preceded and prepared by others without which they would not have existed. But precisely by discovering that long series of interactions that make up the class and the way in which its moments are bound to one another students will come to learn to teach.

Third of all, the common approach to teacher observation focuses exclusively on what the teacher does, completely neglecting the students. But, regarded in itself, with no concern for what students do, the activity of the teacher lacks coherence, becomes unintelligible and deprived of any educational value. For the teacher's activity is determined as much by the students' response as by the lesson plan. Even when we do not want it to be so, the teacher's input always reflects itself in the behavior of the students, just as their behavior will be mirrored in the teacher's. In this sense, teaching is a dialectical activity through and through. If the educational objective assumed are to be attained by the end of the class, this dialectical relation must be carefully cultivated on every level the interaction between the teacher – student relation unfolds. One must start working on this relation at the affective level, paying attention to the mood of the students, taken both individually and collectively, and, if needed, trying to improve it; then move to the moral level, of the values brought into play in class by both sides, which require from us to examine the degree to which they are in line with the values of the school and with the educational ideal of the state; and, finally, pass to the intellectual level, of the knowledge and abilities students are supposed to assimilate.

But, along with these three pedagogical limitations vitiating the common approach to teacher observation there is a fourth, psychological one. A line of research begun at the end of the 1960s on visual and auditory perception shows that our attention is selective in nature (see also Neisser & Becklen, 1975; Simons & Chabris, 1999; Simons & Jensen, 2009; Chabris & Simons, 2010, Neisser, 2014). Which means to say that when an individual focuses on one thing, she tends to completely miss others entering her perceptive field, and this even when they are considerable in scale and/or unexpected. As Neisser and Becklen write: "Event perception might be so organized that when a particular structured flow of information is being followed, or a particular representation constructed, the perceiver cannot follow or construct an unrelated one" (Neisser & Becklen, 1975, p. 493).

To test this thesis, at the end of the 1990s, Daniel Simons and Christopher Chablis (Simons & Chabris, 1999) have devised a now famous experiment in which subjects were asked to watch a short video (available online at https://www.youtube.com/watch?v=IGQmdoK_ZfY) and count how many times passes two basketballs a group of five students disposed in a circle. At a certain point, a sixth student dressed in a gorilla costume enters the scene, walks into the center of the circle, which is also the center of the perceptual field, pounds his chest several times and leaves. Simons and Chablis's study shows that, despite its conspicuousness, the gorilla remains unnoticed for more than 40% of the subjects (Simons & Chabris, 1999, p. 1068). And it also shows that, in general, the more unexpected such a perceptive event is, the higher the chances for it to remain unnoticed (Simons & Chabris, 1999, p. 1070).

If the first three pedagogical limitations were showing that the common approach to teacher observation is simply unsuited for the task, this fourth, psychological, limitation suggests that it condemns observation to be a failed learning endeavor. For, insofar as guided observation leads to "inattentional blindness" (Mack & Rock, 1988) and the "disappearance" (Kolers, 1969, as cited in Neisser & Becklen, 1975, p. 481) of any unexpected events from the perceptive field, the observer will be deprived of the possibility to revisit later her experience in class and draw any didactic insights from it. The time spent doing guided observation is emptied by the very way it is conceived and undertaken of the content that might serve as basis for learning.

Now, considering that these four limitations are constitutive to the common approach to teacher observation it is obvious that they can never be surmounted. In this case, should teacher observation be abandoned?

3. The Educational Value of Teacher Observation

In our opinion, it is not teacher observation as such that needs to be discarded, just the common approach to it. Even though it was used for more than one hundred years, it is not the only one possible. Observation can be guided, but also free. The observer can follow a protocol, but also her own interests. And such free observation appears to have all the didactic benefits needed for it to be a suitable instrument for teacher training. This becomes apparent if we turn our attention to a neighboring field, that of academic development.

In the last thirty years, under pressure to offer high quality education to an ever-larger student population, there have appeared various programs of peer training, monitoring and/or evaluation of instructors in which free observation plays a central role among other things (see in this sense Martin & Double, 1998; Bell, 2001; Bell & Mladenovic, 2008; Harris et al., 2008; Hendry & Gary, 2012; Sullivan et al., 2012; Harper & Nicolson, 2013 și The Centre for Teaching Support and Innovation, 2017). In time, these programs have been subjected to scrutiny and so it has become apparent that they have multiple pedagogical benefits which testify to their educational value. Three studies in particular are of interest for us in this context because they attest a direct correlation between the educational value of the program studied and its observational component, thereby showing that free observation can be assumed as foundation for a new approach to teacher observation to be used in initial teacher training.

The first study was done by Maureen Bell (2001) between 1997 to 1998 and it deals with a teaching development program offered by an Australian university. In this program participants are asked to pick an experienced colleague whom they trust to go together through four cycles of planning – teaching/observation – feedback and reflection. In three of these four cycles the participants in the program teach, while the support colleague observes, and in the fourth the roles are reversed. In the end, the participants submit a written report in which they analyze what they have learned, the strengths and weaknesses of their teaching performance and the efficacy of the program. Maureen Bell's study (2001) involved 28 subjects and it relied on a qualitative, interpretive methodology. An analysis of the final report submitted makes five things manifest: 1) that the program is effective in developing the participants pedagogic ideas and skills; 2) that it has positively impacted their teaching; 3) that it has boosted their self-confidence; and 4) that it has improved collegiality; and 5) that it has motivated them to seek ongoing development of their pedagogical competence. For us, it is important to note that two participants link two of these benefits directly to the observational component of the program (Bell, 2001, p. 34). One of the participants writes:

"I have bebefited enormously from observing [the support colleague's] class because I saw how he emphasized student comfort and participation and the positive outcomes of these states on student learning and self-esteem" (Bell, 2001, p. 34).

And the other one notes:

"… to critically observe another person's use of these techniques makes their impact a lot clearer… it has also highlighted a few areas where I could improve my own use of these techniques" (Bell, 2001, p. 35).

Of course, the fact that 2 participants out of 28 attribute the pedagogical benefits of the program to its observational component can hardly be taken as proof for the fact that free observation should be assumed as ground for a new approach to teacher observation. And this, all the more that neither of them ties both of these benefits to it. But, nevertheless, Maureen Bell's (2001) conclusion must be retained as it will be reenforced by the two other studies mentioned.

The second study of interest in this context dates from 2005 and was done by Amani Bell and Rosina Mladenovic (Bell & Mladenovic, 2008) who dealt with a professional development program for adjunct professors in use at the Faculty of Economics and Business at the University of Sydney. The program relied on peer observation of teaching and self-reflection and span for the duration of a semester. The program also involved three training sessions on: i) lesson planning, activities to do in class and setting adequate expectations; ii) the results of peer observation; and iii) how to give feedback during and after the class observed.

In contrast to the program previously mentioned, in this case observation was not entirely free, but neither was it guided by questions and specific observation items as is the case in the common approach. The guidance was offered by the student feedback form for instructors which approaches teaching in general terms, not singling out any of its specific aspects and calling for an analysis of what has happened throughout the semester. The form contains statements such as "The tutor encouraged students to actively participate in the tutorial." or "The tutor's feedback helped students to learn." (Bell & Mladenovic, 2008, p. 750).

Bell and Mladenovic's study (2008) involved 52 participants who signed up voluntarily to the program, but only 32 have agreed to the publication of the results. As in the previous studies a qualitative methodology was used, which involved an interpretive analysis of the opinions of the participants collected from the observation forms, through discussions during the three training sessions, and a through survey and a focus group held at the end of the semester.

Bell and Mladenovic study (2008) confirms Maureen Bell's conclusion (Bell, 2001), but it also uncovers something highly relevant. It shows that the educational value of the program springs above all from observation rather than its other components such as the feedback given and received by the participants or the three training sessions. When asked: "Have you found this to be a valuable exercise? Provide reasons for your answer." 30 out of 32 subjects respond in the affirmative and, to motivate their answer, the majority invokes that the possibility to observe how colleagues teach will improve their academic performance. Just 2 out of 30 participants consider the program valuable because of the feedback received and only one because of the opportunity to give it.

The third study that deserves to be mentioned has been undertaken by Graham D. Hendry and Gary R. Oliver (Hendry & Gary, 2012). Its significance in this context springs from the fact that it builds a bridge between the two studies previously mentioned. On the one hand, it confirms Bell and Mladenovic's conclusion (2008) that observation has a higher educational value than the feedback given and received or any other component of such a program (Hendry & Gary, 2012). And, on the other hand, it confirms and further details the benefits of observation identified by Maureen Bell (2001).

Hendry and Gary's study (2012) focuses on a teacher development program offered by a large comprehensive university from Australia once again. The program consists of three modules, and it spanned two semesters. The first module, taking place in the first semester, was an introductory course to pedagogy and didactics. In the second module the participants chose a partner and go together alternating the roles through several cycles of peer observation followed by feedback sessions. And during the third module the participants do a project on university teaching and learning.

Hendry and Gary's study (2012) was undertaken in 2008 with 9 subjects as a 30-minute semi-structured interview on the perceived utility of peer observation and the ways in which this experience was later used. By analyzing the transcripts of these interviews, the authors have identified three clear benefits of observation.

First of all, for 8 out of the 9 subjects observation led to the acquisition of new teaching strategies and boosted their confidence in their ability to use them successfully. For this, the possibility to see how

students respond to the input of the teacher and to follow in real time the dynamic of the teacher-student relation played a crucial role (Hendry & Gary, 2012, p. 6). We find here a confirmation of the connection between observation and the first benefit of the program identified by Maureen Bell (2001). But, in contrast to Bell, Hendry and Gary (2012) attest a connection also with the third benefit she identifies.

Second of all, Hendry and Gary (2012) report that for some participants observation confirmed the efficacy of their teaching style. In this sense a remark made by one of the participants is highly suggestive:

"[I] could see the class listening intently when she would give personal examples, and I have always tried to do that anyway, but I thought, yeah, that works too… just confirming, yeah, I am doing the right thing" (Hendry & Gary, 2012, p. 6).

This conclusion further details the connection between observation and the third benefit of the teaching development program identified by Maureen Bell.

Third of all, Hendry and Gary (2012) report that observation reveals what is difficult to do in class. In this sense it functions as a tool for calibrating instructors' expectations from themselves and their students. In connection with a peer's teaching style one of the participants observes:

> "[it] was… like a lot of energy, maybe that's not my personality you know… that style of teaching… it's almost like a motivational talk, like you can feel the energy in the room… I think I can be enthusiastic but I don't think I could match that" (Hendry & Gary, 2012, p. 6).

And another participant, who usually taught large classes, observes after a lecture held to a small number of students: "I can't teach like that [in a large lecture]… I really wish I could but I can't" (Hendry & Gary, 2012, p. 5).

Considering these studies attesting the educational value of free observation it becomes apparent that teacher observation should not be abandoned. Rather, it should be reformed taking free observation as its ground.

4. Conclusion

In the present paper we have subjected the common approach to teacher observation to a critical analysis from a pedagogical and psychological point of view and we have showed that it is marked by four constitutive limitations. First of all, it invites students simply to get acquainted with the teaching performance, not to analyze and understand it. Second of all, it reduces the class, dynamic in nature, to a series of static scenes disconnected from one another. Third of all, it focuses exclusively on the teacher and completely misses students' response to what the teacher does. And fourth of all, insofar as the observation protocols used direct students' attention to specific aspects of the teaching performance, they deprive them of the possibility to see in a perspective what is happening in class, thereby depriving them of the opportunity to learn to teach.

In view of these limitations the common approach to teacher observation cannot be corrected and improved. But this, however, does not mean that teacher observation itself should be excluded from the arsenal of teacher training tools. For there are other ways of doing it. Observation can also be free, not only guided. And free observation appears to offer those pedagogical benefits needed for it to be used in teacher training. To prove this, in the second part of the paper we turned our attention to a neighboring field, that of academic development, which relies heavily on free observation and where its educational value has been closely scrutinized. So, we showed that free observation has all the pedagogical benefits that make it a useful tool for teacher training.

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Project-Based Learning - a Tool to Increase Students' Intrinsic Motivation

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Project-Based Learning - a Tool to Increase Students' Intrinsic Motivation

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Abstract

During the past decades the world has been changing and transforming at a fast pace due to the advancements in all fields, especially the technological ones and the educational systems have been touched by these alterations. Consequently, educators and teachers are striving to adapt to the students' needs and interests. Moreover, in a society in which students feel more and more demotivated to learn, it is up to teachers to find ways to ignite students' curiosity and interest that may lead to the desired satisfaction and pleasure to learn, resuscitating the intrinsic motivation to learn. In this context, this article aims to highlight the impact of Project-Based Learning as a learning tool which can benefit the students by fostering motivation and engagement during classes due to its key feature: it is an approach which places the students in the centre of learning by encouraging them to participate in an active way and take responsibility for the entire process, thus students own the learning process which enables them to find the engagement and motivation to study within themselves.

Keywords:
motivation, project-based learning, self-determination theory (SDT)

1. Introduction

Students in Romania are highly demotivated regarding school and the educational process, according to the 2021 PISA results (OECD, 2013). They struggle to find purpose and significance in learning, as well as the spark that would guide them towards active, authentic learning, freed from the pressures of national evaluations, mock exams, tests, or simple oral assessments.

The literature has demonstrated that Project-Based Learning is an efficacious teaching strategy used by teachers not only to increase student motivation but also to foster other essential aspects of learning, such as increased interest in the subject of study, greater curiosity, and enhanced creativity. Studies recognize the importance of this method in teaching, as it enables students to acquire skills and develop competencies necessary for lifelong learning. Through Project-Based Learning, students learn to solve real-life problems, become more skilled in decision-making, and improve their time management. Furthermore, they can develop non-technical skills, such as teamwork, cooperation, communication, leadership, and project management.

2. Theoretical foundation

2.1 Project-Based Learning

Project-Based Learning (PBL) is a student-centred instructional method which engages students in the educational process in an active way, allowing them to learn by doing. The literature links Project-Based Learning with the progressive education movement of the late 19th century in the United States, where William Heard Kilpatrick first introduced the term "Project" in his work *The Project Method* (1918). The principles underlying this approach are also reflected in John Dewey's philosophy (1916), which advocates for 'learning by doing' as an essential component of effective education.

Blumenfeld et al. (1991) define Project-Based Learning as an approach in which students lead the learning process and actively engage in investigations to find solutions to real-world problems which they find relevant. Students conduct research, test hypotheses, collect and analyse data, and communicate their findings to peers, parents, or even the broader community. This approach shifts the emphasis away from rote memorization for assessment purposes, encouraging students instead to integrate the newly acquired knowledge across different contexts or disciplines.

In PBL, students play an active role in constructing new knowledge, transitioning from passive recipients of information to responsible agents of their own learning process. According to Vygotsky's social constructivism (1968), students build new knowledge collaboratively, assisted by the teacher, and learn concepts more deeply through cooperation with peers. This fosters greater involvement in learning as

students strive to solve authentic problems relevant to their interests, stimulating curiosity and leading to a deeper, more comprehensive understanding of new concepts.

As a student-centred method, Project-Based Learning reduces the teacher's role as the main provider of knowledge. Teachers take a step back, becoming facilitators of learning rather than the traditional "sage on the stage' and more like a 'guide on the side" (Nation, 2008, p. 109). According to Mergendoller et al. (2013), teachers in this setting fulfil multiple roles, from conductor and coach to process designer. While students have autonomy, the teacher remains a supervisor and moderator throughout, providing guidance and support whenever needed. Teachers also play a key role in helping students develop essential, transferable skills such as negotiation, teamwork, collaboration, communication, active listening, and respect for others' perspectives.

2.2 Motivation

The definition of motivation is challenging to provide as it lacks a comprehensive and universally accepted interpretation. Etymologically, the word 'motivation' comes from the Latin verb *movere* which means 'to move'; in other words, motivation can be understood as what drives a person to choose to engage in a particular activity. However, motivation encompasses more than mere involvement in an activity. It also determines the duration and effort an individual is willing to invest in pursuing that activity. Thus, motivation answers three essential questions:

- Why do people decide to engage in an activity?
- How much time are they willing to spend doing the activity?
- How much effort will they exert in this activity? (Dörnyei & Ushioda, 2011).

Motivation is a meta-concept that subsumes several related constructs, such as engagement, interest, persistence, and self-efficacy (Irvine, 2018). It also encompasses a variety of theories or theoretical constructs, including self-efficacy theory, goal theory, social-cognitive theory, expectancy-value theory, flow theory, attribution theory, and self-determination theory.

What are the underlying motives for sustained and enduring effort in an activity? Are these motives shaped by external factors—such as rewards, threats, fear of judgment, shame over unmet expectations, socioeconomic factors, and contextual influences—or by internal factors? What happens when a child lacks motivation to participate in an activity or to learn? Can schools effectively motivate students? Do teachers have the resources to inspire in students not only the willingness to engage but also the passion and interest to persist in a task until they find the right solution and to resist giving up at the first failure or setback?

In this paper, we examine motivation through the lens of Self-Determination Theory (SDT) (Ryan & Deci, 1985), which offers a significant foundation for understanding motivation and the factors underlying intentional behaviour. Furthermore, this theory identifies three types of motivation: intrinsic, extrinsic, and amotivation based on the motives that make people take action (Ryan & Deci, 2000). It is centred around the question why people decide to engage in an activity, having at one side a total lack of determination to act or a behaviour which is not self-determined (amotivation) to a behaviour which is self-determined (intrinsically motivated).

Individuals with intrinsic motivation engage in a task for the pleasure and satisfaction they derive from the activity itself. Intrinsically motivated behaviour is self-determined and autonomous.

Extrinsically motivated behaviours have an instrumental nature (Deci et al., 1991), meaning individuals engage in certain activities with a specific goal in mind. These two types of motivation are not opposing each other; extrinsically motivated behaviours are not necessarily non-self-determined, as it was previously assumed before the development of SDT. Deci & Ryan distinguished four types of extrinsic motivation based on the level of behavioural regulation: external, introjected, identified, and integrated (1985):

- *External Regulation*: One's behaviour is driven by reward or punishment. This type of regulation is the least self-determined behaviour. It is non-autonomous and controlled.
- *Introjected Regulation*: This type of extrinsic motivation is also a controlled form of behaviour, however an 'internally controlled' regulation (Ryan & Deci, 2020) as it has been partially internalised. Ryan uses the term' ego-involvement' (1982). One's behaviour and involvement are driven by internal rewards of self-esteem with the view to avoiding failure and anxiety or feeling guilty.
- *Identified Regulation*: Motivation where an individual values an activity and his behaviour employs a degree of willingness which aligns with a

personal identification (e.g., a student working on math because they realize that mastering the subject is essential for achieving a high exam score). The behaviour is autonomous and relatively self-determined, as it is pursued for personally valued reasons rather than external pressure.

- *Integrated Regulation*: This form is the most autonomous as people have internalized the value and the purpose of their actions, and the behaviour aligns fully with the individual's values, becoming an expression of their identity. Such behaviours are fully self-determined and typically emerge in early adulthood, which is why this type of motivation is not relevant for our study involving high school students.

This categorization of extrinsic motivation is grounded in the concept of internalization, which SDT considers a key motivational element. As noted earlier, on this continuum of internalization, behaviour which is regulated externally or introjected represents a controlled form of motivation, while autonomous forms of motivation are behaviours regulated by identification and integration. However, there is a difference between autonomous extrinsic motivations and intrinsic motivation. In the case of the latter, the person's behaviour is motivated by interest, enjoyment and pleasure they derive from an activity, whereas in the case of the former, one appreciates the value of an activity and its worthwhile function.

Amotivation is a state in which an individual lacks the intent to act. We can thus assert that intentionality defines motivated behaviour, while its absence leads to disengaged behaviour, often due to a perceived lack of competence or lack of value in an activity (Deci & Ryan, 2000).

SDT hypothesises that more autonomous forms of motivation lead to more engagement and interest in any activity. In this respect, it is essential that teachers support students' autonomy and create contexts in which students get engaged due to their interest and experience a sort of ownership of activities as a result of the choice they make. In this way, intrinsic motivation is enhanced and students become more engaged in the learning process. We consider that PBL creates the appropriate contexts to develop students' autonomous forms of motivation, especially intrinsic motivation as they choose what they want to investigate according to their interests and curiosity.

In this continuum of self-determination, intrinsic motivation lies at one end, representing fully self-determined behaviour, while amotivation, or the absence of motivation, occupies the opposite end, reflecting non-self-determined behaviour. Between these two poles lies extrinsic motivation, characterized by its four forms and varying degrees of behavioural self-determination, as illustrated in *Table 1.*

Table 1.
Self-Determination Theory's Taxonomy of Motivation (Deci & Ryan, 2017)

Behaviour	Non-self-determined					Self-determined
Motivation	Amotivation	Extrinsic Motivation				Intrinsic Motivation
Regulatory Styles	Non-regulation	External Regulation	Introjected Regulation	Identified Regulation	Integrated Regulation	Intrinsic Regulation
Perceived Locus of Causality	Impersonal	External	Somewhat External	Somewhat Internal	Internal	Internal
Regulatory processes	Non-valuing, Incompetence, Lack of Control	External Rewards and Punishments	Self-Control, Ego-Involvement, Self-Esteem	Personal Importance, Conscious Valuing	Congruence Awareness	Interest, Enjoyment Satisfaction

3. Research methodology

3.1 Research design

This study proposes to present key informative data highly relevant to the topic of motivation, Project-Based Learning, and the relationship between the two. The research design is quasi-experimental with two groups, namely experimental and control, being subjected to pre-test and post-test. This design with two groups which are not equivalent are referred to in the literature as a 'compromise design' as described by Keringer (1970, apud Cohen et al., 2007, p.282) as it is quite impractical in school settings to randomly assign students in the control or experimental group:

Experimental Group *V*1 *I* *V*2

Control Group *V*3 *V*4

In the experimental group, *I* represents the intervention, while *V1*, *V2*, *V3*, and *V4* denote the values obtained at the pre-test and post-test for both groups. The dotted line separating the two parallel rows indicates that the two groups were not formed randomly under laboratory conditions. The optimal sample size was determined through power analysis using the GPower software (version 3.1). For the proposed research design with two groups and an α level of .05, 68 participants (34 in each experimental condition) would be required to achieve an acceptable power level.

Accordingly, a cohort of 78 high school students in the 10th grade was selected for this study, with 38 in the experimental group and 40 in the control group. Participants were not randomly assigned to the two groups, as this is not feasible within a school setting. However, initial random assignment occurred at the start of high school, based on students' chosen academic profile and admission grade.

3.2 Research objectives, questions and hypotheses

- Research objectives:

O1: Analyse the influence of Project-Based Learning on students' motivation for learning

O2: Identify the effects of motivation types on learning

- Research Questions**:**

Q1: To what extent does Project-Based Learning influence students' motivation for learning?

Q2: What types of motivation develop during Project-Based Learning?

- Research Hypotheses

H1: Students' motivation for learning will increase during Project-Based Learning.

H2: Intrinsic motivation will increase during Project-Based Learning.

H3: Extrinsic motivation will decrease during Project-Based Learning.

3.3 Variable and measurement instrument

This study measured the variable *motivation for learning* using a self-assessment tool entitled the *Academic Motivation Scale (AMS)*. This instrument is an adaptation of the *Academic Motivation Scale - College (AMS-C 28)* developed by Vallerand et al. (1992) and adapted for the Romanian educational system by Amalia Miulescu (2019). Miulescu's research established a tool for evaluating motivation within the Romanian academic setting that adhered to the necessary psychometric standards. The findings aligned with existing literature and reinforced the factorial structure, reliability, and predictive validity of the Romanian adaptation of the AMS. The study validated the seven-factor structure of the scale and demonstrated satisfactory psychometric properties for this version, with Cronbach's alpha values ranging from .69 to .87 and an average of .81.

The AMS evaluates high school students' academic motivation based on Self-Determination Theory, identifying three types of motivation which are grouped into seven dimensions: intrinsic motivation (subdivided into motivation to know, motivation towards accomplishment, and motivation to experience stimulation), extrinsic motivation (with regulatory types of identification, introjection, and external), and amotivation.

The scale includes 28 items which are grouped in seven subscales with four items each that respond to the dimensions previously mentioned with responses were measured using a seven-point Likert scale, ranging from total disagreement (1) to total agreement (7) with a midpoint, neutral (4). Examples include:

- 'Honestly, I don't even know why I waste my time coming to English class' (amotivation);
- 'Because, without English, I won't get a well-paying job in the future' (external regulation);
- 'To prove to myself that I am capable of achieving a high grade in this subject' (introjected regulation);
- 'Because I believe the information from English class will help me in my chosen career' (identified regulation);
- 'For the pleasure I feel when I discover new things in English class' (intrinsic motivation to know);
- 'Due to the enjoyment I feel when I surpass myself in tasks given in class' (intrinsic motivation toward accomplishment);
- 'For the pleasure I feel when reading interesting authors suggested by the teacher in class' (intrinsic motivation to experience stimulation) (Vallerand et al. (1992).

According to the instructions given in the description of the instrument, the answers for questions 5, 12, 19, 26 have been reversed. The total score was obtained by summing up all 28 items, as well as calculating individual scores for each of the three subscales of the instrument (extrinsic motivation, intrinsic motivation, and amotivation). The Cronbach's alpha coefficients for the AMS questionnaire ranged from α = .88 at the pre-test stage to α = .87 following the intervention. The scale was administered to both groups, experimental and control at the beginning and at the end of either the intervention for the experimental group or the traditional teaching of the subject for the control group. The completion of the test took 20 minutes and it was a pen and paper completion during the English class. Regarding ethical aspects which were involved, the students' parents or legal representatives have been informed about the purpose of the study and the fact that the students' participation in the study is voluntary and parents need to give their informed consent to it. Students have been informed as well about the possibility of withdrawal from the study at any time if considered. The AMS scale was anonymous, students didn't have to sign the answer form. We have emphasized the necessity of objectivity and honesty in completion of the AMS scale.

4. Results and discussion

Table 2.

Descriptive statistical data for the control and experimental conditions regarding the studied variable

	Experimental group		Control group	
Variable	*M*	*SD*	*M*	*SD*
AMS_pre_Extrinsic Motivation_Identified Regulation	21.89	4.90	19.03	4.64
AMS_pre_Extrinsic Motivation_Introjected Regulation	20.39	5.07	18.72	7.46
AMS_pre_Extrinsic Motivation_External Regulation	22.74	4.69	21.77	4.63
AMS_pre_Intrinsic Motivation_ To Know	21.74	3.77	19.82	4.70
AMS_pre_Intrinsic Motivation_Towards Accomplishment	19.66	4.41	17.85	5.91
AMS_pre_Intrinsic Motivation_To Experience Stimulation	16.50	4.07	13.97	6.03
AMS_pre_Extrinsic Motivation_Total	65.03	12.12	59.51	13.34
AMS_pre_Intrinsic Motivation_Total	57.89	9.89	51.64	15.47
AMS_pre_Amotivation	25.58	4.26	23.23	5.49
AMS_post_Extrinsic Motivation_ Identified Regulation	20.55	5.83	21.48	3.94
AMS_post_ExtrinsicMotivation_ Introjected Regulation	19.95	4.89	18.79	5.55
AMS_post_Extrinsic Motivation_ External Regulation	20.74	6.04	22.57	4.88
AMS_post_Intrinsic Motivation_ To Know	22.11	4.08	19.18	4.01
AMS_post_Intrinsic Motivation_ Towards Accomplishment	20.84	3.82	16.80	5.42
AMS_post_Intrinsic Motivation_To Experience Stimulation	18.32	3.87	13.35	5.37
AMS_post_Extrinsic Motivation_Total	61.24	14.75	62.60	10.91
AMS_post_Intrinsic Motivation_Total	61.26	10.42	49.33	12.62
AMS_post_Amotivation	25.61	4.18	22.45	5.25

Note: M = Mean; *SD* = standard deviation.

Regarding the level of motivation displayed by students before and after the intervention, it can be stated that, for the experimental group, the projects in which they participated positively influenced intrinsic motivation. The total mean intrinsic motivation score increased from 57.89 before the intervention to 61.26 after the intervention, emphasising a significant increase in overall intrinsic motivation.

The table below illustrates the increase in the mean intrinsic motivation score after the intervention for the experimental group, as well as the decrease in the mean intrinsic motivation score following traditional instruction for the control group, both for each subscale and the overall score.

When examining the three subscales of intrinsic motivation—namely, intrinsic motivation to know, intrinsic motivation towards accomplishment, and intrinsic motivation to experience stimulation—we observe an increase in the mean scores across all three subscales: from (21.71, 19.66, 16.50) before the intervention to (22.11, 20.84, 18.2) after the intervention.

We can conclude that Project-Based Learning, as an innovative teaching method, can be used by educators to enhance students' intrinsic motivation for

learning, as students become more engaged in project tasks, discover an interest in collaborative project work as they can choose the topic and are stimulated by challenging tasks, all of which foster a desire to independently explore new ideas, rather than merely completing a task assigned by the teacher.

Table 3.
Values of intrinsic motivation for experimental and control groups

Subscale of intrisic motivation	Increase after the intervention Experimental group	Increase after teaching Control group
Motivation to know	0.4	0.64
Motivation towards accomplishment	1.18	1.05
Motivation to experience stimulation	1.82	0.62
Intrinsic motivation-total	3.37	2.31

In the control group, the mean intrinsic motivation score declined after traditional instruction of the same lesson, from 51.64 before instruction to 49.33 afterwards. Analysing the three subscales of intrinsic motivation—motivation to know, motivation towards accomplishment, and motivation to experience stimulation—the pre-instrustruction means were 19.82, 17.85, and 13.97, respectively. After traditional instruction, these means decreased to 19.18, 16.80, and 13.35. The smallest decline was observed in the third subscale, motivation to experience stimulation. This may suggest that the novelty of the topics discussed during instruction ("The Pink Tax" and "The Drug Trap") could have encouraged student engagement and curiosity for learning new concepts, even within the traditional teaching framework where the teacher delivers all information.

Table 4.
Values of extrinsic motivation for experimental and control groups

Subscale of extrinsic motivation	Decrease after intervention Experimental group	Increase after teaching Control grup
External regulation	2.00	0.8
Introjected regulation	0.44	0.07
Identified regulation	1.34	2.45
Extrinsic motivation- total	3.79	3.09

Regarding extrinsic motivation, the total mean score for the experimental group declined significantly from 65.03 before the intervention to 61.24 after the intervention.

Overall, it can be suggested that students' engagement during classes is often motivated by the anticipation of a reward, most commonly a grade. In the case of the project work completed, however, participation was not conditioned by receiving a grade. Thus, students' attitudes towards learning were less influenced by external rewards, and their project engagement was not dependent on extrinsic factors, with the most substantial decrease observed in external regulation (from 22.74 before the intervention to 20.74 afterward).

The situation is different for the control group, where total extrinsic motivation increased from 59.1 before traditional instruction to 62.60 after traditional instruction as well as two of the subscales. This indicates that students are learning primarily because the teacher has imposed it upon them or constrained them to do so, rather than finding satisfaction in the learning process itself.

Table 5.
Values of amotivation for experimental and control groups

Amotivation	Increase after intervention Experimental group	Decrease after teaching Control group
Amotivation	0.03	0.78

Regarding amotivation, there is no significant difference between the pre-intervention and post-intervention means, with values of 25.58 and 25.61, respectively; the difference being only 0.03. This demonstrates that students who lack motivation to engage in any activity are resistant to most teaching methods, whether innovative or traditional. A similar situation is observed in the control group, where there is a slight decrease following traditional instruction, from 23.23 to 22.45, a difference of 0.78.

5. Conclusions

Project-based learning (PBL) is an educational tool that places students at the core of the learning process. Research findings indicate that its use as an instructional method positively influences the educational process by enhancing students' motivation to study, particularly their intrinsic motivation.

Motivation serves as the source of engagement in an activity, persistence in carrying it out, and the energy expended in completing tasks. Although the initial impetus for stimulating motivation may be external—referring here to extrinsic motivation, such as rewards, high grades, or feelings of shame or fear—

students' behaviour can be regulated so that this external control diminishes, allowing for self-determined behaviour. This self-determined behaviour involves valuing tasks and integrating them systematically, so that the reason students engage is the pleasure of learning new things, the satisfaction of achieving certain outcomes, or simply the experience of being so deeply engaged in an activity that nothing else seems to matter, as articulated by Csikszentmihalyi's (2014) flow theory.

It is desirable for intrinsic motivation to be activated at the expense of extrinsic motivation, as we want our students—future college students and, later, young professionals eager to perform in the workplace and succeed—to value effort and engagement in task completion for the enjoyment and satisfaction they feel when discovering something new or finding an interesting solution. Grades and tests that students study for hinder this natural developmental process and tend to control student behaviour, leading to negative effects on their engagement and interest in tasks (Ryan & Deci, 2017). Furthermore, the pressure of grades "diverts students' natural tendency to understand, explore, and be creative" (Ulrich, 2016, p. 66).

Despite the positive acknowledgment of the influence of project-based learning on student motivation, there are challenges in implementing this method for both students and teachers. It is important to note that implementing this teaching method is difficult for teachers without adequate prior training. A lack of experience in managing student work throughout projects can negatively impact overall outcomes. Additionally, for the method to be effective, students should be familiar with it from an early age, as studies have shown. At the same time, the novelty of the method may have positively influenced students, yet the challenges faced by teachers compel us to continue researching this field.

Further research is necessary to determine whether student motivation may be influenced not by the teaching method itself, but by the level of motivation of the teachers, as they support the learning process. Students' attitudes toward learning may be affected by teachers' attitudes and motivation.

Students with low motivation or those lacking motivation who studied using the project-based learning method did not show subsequent improvements in motivation. Researchers have explained that these results stem from the fact that individuals tend to avoid activities in which they do not excel. It would be interesting to investigate whether students' self-efficacy aligns with the effectiveness of the method. This would suggest that the use of project-based learning could be particularly effective for those students who are highly motivated and confident in their high competence in task resolution and the success of their work.

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Treatment of Generalized Anxiety Disorder with Virtual Reality. Systematic Review

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Abstract

The present work represents a systematic review that aims to consolidate information from the specialized literature on the treatment of generalized anxiety using virtual reality. Virtual reality (VR) has become a valuable tool in psychotherapeutic treatments due to its ability to create controlled and immersive environments. These environments allow patients to experience and manage situations that cause them anxiety, in a safe and controlled manner. In the context of treating generalized anxiety disorder (GAD), VR is used for gradual exposure to anxiety-inducing stimuli, providing a framework in which patients can learn to control their anxious reactions without the risk of being overwhelmed. This study analyzed 124 specialized articles on the topic: "Treatment of generalized anxiety with the help of virtual reality." After applying inclusion and exclusion criteria, 9 articles were included in the analysis.

Keywords:
treatment, generalized anxiety disorder, virtual reality

1. Introduction

Generalized anxiety is one of the most common mental disorders worldwide, with a negative impact on the quality of life of millions of people. Characterized by excessive and persistent worry, generalized anxiety can lead to a deterioration in daily functioning, affecting interpersonal relationships, academic and professional performance, and even physical health. With the rising incidence and complexity of this disorder, it has become imperative to identify effective and accessible treatment methods that people can readily use.

The use of virtual reality (VR) technology in treating generalized anxiety represents an innovative and promising approach that deserves special attention. VR enables the creation of controlled and immersive environments that simulate and manage anxiety-inducing situations, in a safe and very realistic manner. This technology has the potential to revolutionize traditional therapeutic methods, offering a flexible framework that can be tailored to meet the individual needs of patients. This is highly valuable, as it is often challenging to identify safe settings for exposing patients to anxiety-provoking situations.

There are many benefits of using VR in treating generalized anxiety. These include reduced costs associated with traditional therapy sessions, increased access to treatment for individuals in remote areas, and the capability for real-time monitoring and adjustment of therapeutic interventions. Additionally, VR can help increase adherence to treatment and reduce the stigma associated with mental disorders, by offering a more engaging and less intimidating experience for patients.

2. Theoretical foundation

2.1. Anxiety

Anxiety is a future-oriented state, associated with intensive preparation for a potential negative event (Barlow, 2002). Anxiety, particularly when it manifests as a disorder, can have negative and impactful consequences on the quality of life of an individual. People with anxiety disorders often report high levels of stress, difficulties in emotional regulation, and challenges in maintaining social relationships (Hofmann et al., 2012). Anxiety is also frequently associated with other mental health problems, such as depression, which further exaggerates the burden on the individual (Kessler et al., 2008).

Anxiety disorders encompass a wide range of conditions, each with distinct characteristics. However, they all involve excessive fear and worry that interfere with daily life. Treatment for anxiety disorders often includes a combination of cognitive-behavioral therapy (CBT) and medication, both of which have proven effective in reducing symptoms (Hofmann et al., 2012).

CBT is one of the most widely used and empirically supported approaches for treating anxiety. CBT works by helping individuals identify and challenge their anxious thoughts, as well as gradually expose themselves to anxiety-provoking situations in a controlled manner. However, for some individuals, traditional CBT might be limited by difficulties in imagining or directly encountering anxiety-inducing scenarios, which is where VR can play a transformative role.

With VR, patients can be safely and gradually exposed to simulated anxiety-triggering situations that closely resemble real-life conditions, but remain within a controlled therapeutic environment. This method not only enhances the effectiveness of traditional exposure techniques used in CBT but also increases accessibility and engagement for patients who might find it difficult to participate in conventional therapy. Thus, VR offers an innovative, complementary tool in the ongoing effort to improve therapeutic outcomes for those suffering from anxiety disorders, including generalized anxiety.

2.2. Types of Anxiety

Anxiety disorders are a diverse group of mental health conditions characterized by excessive and persistent fear and anxiety, which significantly impact an individual's daily life. According to the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5), these include a variety of distinct disorders. Among them are separation anxiety disorder, selective mutism, specific phobia, and social anxiety disorder (social phobia). Panic disorder and panic attacks, agoraphobia, and generalized anxiety disorder (GAD) are also included. Other categories encompass substance/medication-induced anxiety disorder, anxiety disorder due to another medical condition, as well as unspecified or other specified anxiety disorders. Each of these disorders has distinct diagnostic criteria and may present with varied manifestations, reflecting the complexity and diversity of anxiety experiences among affected individuals (APA, 2013).

This diversity highlights the need for tailored therapeutic approaches to address the specific symptoms and challenges associated with each type of anxiety disorder. Given the wide spectrum of anxiety-related conditions, individualized treatments, including VR-based therapies—can provide patients with more relevant and adaptable interventions that align with their unique experiences and needs.

2.3. Generalized Anxiety Disorder

Generalized anxiety disorder (GAD) is characterized by persistent and prolonged worry. This worry, which targets multiple areas of life (such as finances, family, health, and the future), is often excessive and difficult to manage, and it is frequently accompanied by a range of nonspecific psychological and physical symptoms. For example, in the case of a woman presented in the study, her symptoms include insomnia, headaches, muscle tension, long-term worries about various life situations, and daily alcohol consumption (Stein & Sareen, 2015).

The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) includes a set of criteria that must be met to diagnose an individual with this type of disorder.

GAD, as a subcategory of the larger family of anxiety disorders, is characterized by excessive anxiety and worry (anticipatory apprehension) occurring for at least 6 months and involving a large range of activities. These worries are very difficult to control, and the anxiety is associated with at least three of the following six symptoms: restlessness, fatigue, difficulty to concentrate, irritability, muscle tension, and sleep disturbance (difficulty falling or staying asleep, or restless, unsatisfying sleep) (APA, 2013).

2.4. Comorbidity in Generalized Anxiety Disorder (GAD)

Although GAD was previously considered a minor issue without causing significant distress or impairment, recent studies contradict this idea. According to the National Comorbidity Study (NCS), 82% of individuals diagnosed with GAD reported that the disorder caused them major difficulties, evidenced by frequent treatment-seeking (whether medication or psychotherapy) or substantial interference in their daily lives (Massion et al., 1993, as cited in Rowa et al., 2017). Research also shows that GAD rarely appears in isolation. Community surveys indicate that 90% of affected individuals have had other mental disorders at some point (Wittchen et al., 1994, as cited in Rowa et al., 2017).

2.5. Assessment of Generalized Anxiety Disorder

GAD can be measured through a combination of clinical assessments, self-report scales, and structured interviews. A thorough clinical assessment includes a complete patient history, including symptom history and its impact on daily functioning. Self-report scales, like the GAD-7 (Generalized Anxiety Disorder 7-item scale), are frequently used standardized tools for

quantifying anxiety symptom severity (Spitzer et al., 2006). The GAD-7 is a brief, scientifically validated questionnaire that assesses symptom frequency over a two-week period, providing a total score indicating disorder severity. It uses a self-report scale from 0 to 3, where 0 means "not at all," 1 is "several days," 2 is "more than half the days," and 3 is "nearly every day." In addition, structured interviews, like the SCID (Structured Clinical Interview for DSM Disorders), confirm diagnosis based on DSM-5 criteria. These combined methods enable a comprehensive assessment of the disorder, ensuring a thorough diagnosis.

2.6. Consequences for Quality of Life

The effects of this disorder extend beyond psychological and physiological symptoms, significantly impacting patients' quality of life. When untreated, GAD can intensify symptoms of other mental disorders or lead to a range of complications: depression, insomnia, alcohol or substance misuse, gastrointestinal problems, social isolation, challenges in school or work, and even suicidal potential (Munir & Takov, 2024). GAD deeply affects individuals' psychological state, resulting in a substantial decrease in quality of life. Affected individuals often experience symptoms like constant worry, tension, and irritability, which contribute to the development of other psychological disorders, such as depression. A study by Wittchen et al. (1994) found that 90% of diagnosed individuals had experienced another mental disorder at some point, highlighting the complexity and comorbidity of this disorder.

Physiological symptoms, such as muscle tension, fatigue, and sleep disturbances, negatively affect patients' physical health. These symptoms can lead to decreased energy and capacity to perform daily activities, contributing to a reduced quality of life. Studies, like that of Munir and Takov (2022), emphasize that patients report low sleep quality, which further exacerbates other symptoms of the disorder.

Social consequences of GAD are also significant. Affected individuals often face difficulties maintaining interpersonal relationships and participating in social activities. Fear of judgment or inability to handle social situations may lead to social isolation. Daily functioning, including work and academic performance, is also affected. Constant worry and concentration difficulties can lead to reduced productivity and performance issues. According to a study by Wittchen et al. (1994), 82% of people with specific symptoms reported that the disorder significantly impacted their lives, leading them to seek treatment.

Economic costs associated with GAD are considerable, including direct medical and psychological treatment costs and indirect costs due to productivity loss and work absenteeism. A study by Hoffman and Dukes (2008) showed that GAD is associated with substantial economic costs, highlighting the need for effective and accessible interventions to reduce the disorder's economic burden.

GAD has profound and extensive consequences for quality of life, affecting psychological, physiological, social, functional, and economic aspects of patients' lives.

2.7. Types of Treatments for Generalized Anxiety Disorder

Treatment options for GAD include various psychological interventions: CBT, behavioral therapies, relaxation training, mindfulness training, and meditation. In addition to these interventions, pharmacotherapy is also used, involving certain chemicals to reduce symptoms (antidepressants, benzodiazepines, and anticonvulsant substances) (Hoge et al., 2012).

CBT focuses on identifying cognitive distortions, habitual thoughts, and behaviors that perpetuate and intensify symptoms. Specifically, individuals with GAD may interpret neutral events negatively, which are then analyzed and evaluated in multiple ways, affecting quality of life. Neutral stimuli in the environment may be seen as potentially dangerous, placing the person in a state of constant hypervigilance (Hoge et al., 2012).

During therapy for GAD, patients receive specific instructions to counter anxiety-inducing thoughts. These instructions include essential guidelines, such as treating thoughts as hypotheses rather than absolute facts, evaluating all available evidence to examine their validity, and exploring alternative possible outcomes or situations. For example, to counter probability overestimation thoughts, the patient is encouraged to assess the real likelihood of the anticipated negative event occurring. Additionally, to counter catastrophic thoughts, the therapist asks the patient to imagine the worst possible scenario, followed by a critical assessment of their ability to cope if it were to occur. This process does not involve forcing the patient to see the negative event in a positive or neutral light but rather encourages them to

critically assess the real impact and their capacity to manage it if necessary (Brown et al., 2001).

2.8. Treatment Limitations for Anxiety

The limitations of current treatments for GAD represent a major concern in mental health. Although psychological therapies, like CBT and other therapies found in the literature, are effective for many patients and represent the gold standard, there is a real need to modify and adapt these interventions in a more appropriate and effective manner (Hofmann et al., 2012). Additionally, certain medications, such as selective serotonin reuptake inhibitors (SSRIs) and serotonin and norepinephrine reuptake inhibitors (SNRIs), may have undesirable side effects and limited efficacy for certain patient subgroups (Bandelow et al., 2015). Furthermore, treatment adherence may be low due to the complexity of therapeutic regimens and the side effects associated with some medications. Given these limitations, there is an urgent need for the development and implementation of new therapeutic approaches that are more effective, better tolerated, and more accessible for those affected.

2.9. Virtual Reality

Virtual reality (VR) is an innovative technology that creates a computer-generated simulated environment where users can interact in an immersive and realistic manner. It is defined as an interactive, three-dimensional, artificially produced environment simulated through a computer system, where users perceive presence and interaction with virtual elements as if they were real (Slater & Sanchez-Vives, 2016).

The primary purpose of VR development was to create immersive experiences that allow users to explore and interact with simulated environments beyond real-world limitations. The initial motivation for inventing VR was to provide a platform for experimentation and learning, offering high interactivity and sensory engagement so that users could experience situations and scenarios impossible to replicate in real life (Burdea & Coiffet, 2003).

In mental health, VR has demonstrated effectiveness in treating anxiety disorders, phobias, and post-traumatic stress disorder (PTSD). Virtual exposure therapy enables patients to confront fears in a controlled and safe environment, gradually reducing anxiety associated with specific stimuli (Maples-Keller et al., 2017).

2.9.1. Virtual Reality in Psychology

Using VR in CBT has shown significant benefits in treating anxiety disorders, including GAD. VR allows therapists to create controlled, immersive environments where patients can gradually be exposed to anxiety-inducing stimuli, facilitating desensitization and anxiety reduction. A study by Maples-Keller et al. (2017) showed that virtual exposure therapy is as effective as traditional in vivo exposure, with added advantages such as greater control over exposure scenarios and the ability to recreate specific situations that would be challenging to achieve in real life. A study by Anderson et al. (2013) found that patients using VR for social anxiety treatment reported significant symptom reduction and higher satisfaction compared to traditional therapy.

2.9.2. Virtual Reality and Generalized Anxiety Disorder

Through systematic exposure and desensitization, the patient learns to manage anxiety symptoms adaptively, without resorting to maladaptive behaviors. Thus, by learning relaxation techniques, patients develop responses that are incompatible with the heightened state of anxiety. In classic therapy, direct exposure with the stimulus and imaginary exposure are used. However, these approaches present limitations, such as difficulty creating mental images for some people or increased fear of real-life exposure due to lack of control. VR technology addresses these limitations by creating a completely safe environment where individuals can be exposed to and desensitized from anxiety-provoking stimuli (Repetto et al., 2013).

3. Research methodology

3.1. Research Sources

To identify relevant articles for the chosen topic, namely, *The Treatment of Generalized Anxiety with Virtual Reality*, a systematic search was conducted in two databases (Web of Science and PubMed). The goal was to locate journal articles (scholarly journals) that met specific inclusion criteria and matched the search terms. The keywords used were: "treatment," "generalized anxiety," and "virtual reality". A total of 124 articles were retrieved. These articles were assessed by reading both the abstracts and full texts.

3.2. Inclusion Criteria

The studies included in this analysis needed to meet the following criteria:

1. Quantitative design studies

2. Studies involving individuals over 18 years old
3. Studies written in English or Romanian
4. Participants diagnosed with generalized anxiety disorder

There were no restrictions regarding the patients' gender, race, or place of origin.

3.3. Exclusion Criteria

The exclusion criteria for this research were as follows:

1. Population type: individuals under 18 years old
2. Studies conducted specifically for the development of questionnaires on the introduced concepts were not included in the research
3. Pregnant women
4. Individuals diagnosed with psychotic disorders

3.4. Data Extraction

A pre-set form template was used to extract the following data: author names, study title, year of publication, objectives, sample, study design, and conclusions.

4. Results

Initially, 224 studies were selected based on the introduction of keywords into the specified databases. Following a thorough review of both abstracts and full texts where necessary, 9 studies that met the inclusion criteria remained in this review. The majority of the articles were published between 2010 and 2023, all featuring a non-experimental design. Between 27 and 80 participants (individuals over 18 years old diagnosed with generalized anxiety disorder) were involved in the various studies. Most of the studies analyzed the effect of Virtual Reality therapy on generalized anxiety disorder. The articles included in the research have been systematically presented in Table 1. In Table 2, we have included the following information: author and study name, publication year, study objective, sample, design, and conclusions, to facilitate the tracking of data from the works examined in this study.

The PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) were used to ensure systematic reporting.

Figure 1.
PRISMA diagram

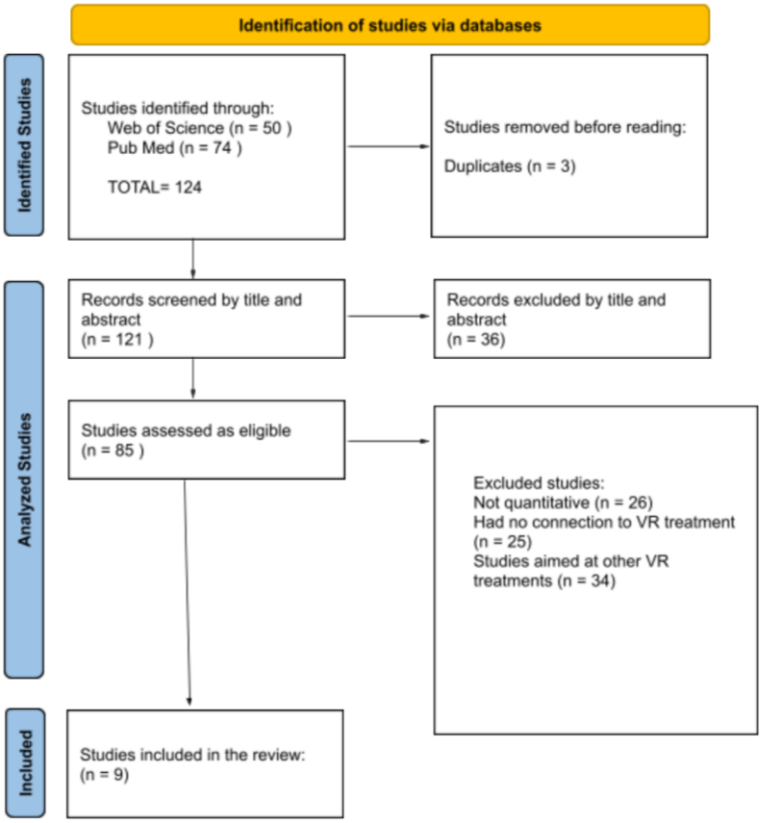

Table 1
Articles in the Systematic Review

Article Number	Authors	Year	Article Title
1	Malbos et al.	2020	Virtual reality for relaxation in the treatment of generalized anxiety disorder: a comparative trial.
2	Navarro-Haro et al.	2019	Evaluation of a Mindfulness-Based Intervention With and Without Virtual Reality Dialectical Behavior Therapy Mindfulness Skills Training for the Treatment of Generalized Anxiety Disorder in Primary Care: A Pilot Study
3	Popa et al.	2022	Standard CBT versus integrative and multimodal CBT assisted by virtual-reality for generalized anxiety disorder
4	Wang, T. C., Sit, C. H. P., Tang, T. W., & Tsai, C. L	2020	Psychological and Physiological Responses in Patients with Generalized Anxiety Disorder: The Use of Acute Exercise and Virtual Reality Environment
5	Guitard, T., Bouchard, S.,	2019	Exposure to a Standardized Catastrophic Scenario in Virtual Reality or a Personalized Scenario in Imagination for Generalized Anxiety Disorder

	Bélanger, C. & Berthiaume, M.		
6	Orr et al.	2023	Virtual reality in the management of stress and anxiety disorders: A retrospective analysis of 61 people treated in the metaverse
7	Repetto et al.	2011	Virtual reality and mobile phones in the treatment of generalized anxiety disorders: a phase-2 clinical trial
8	Gorini, A.	2010	Virtual reality in the treatment of generalized anxiety disorders
9	Wang, T. C., Tsai, C. L., Tang, T. W., Wang, W. L., & Lee, K. T.	2019	The effect of cycling through a projection-based virtual environment system on generalized anxiety disorder.

Table 2
Conclusions of the Selected Articles

Study	Objective(s)	Sample	Study Design, Tools	Conclusions
1. Malbos et al. (2020).	The measurement of the impact of relaxation with VR on GAD. Comparing relaxation in generalized anxiety using Virtual Reality with standard relaxation involving mental imagery. Measuring the impact of VR relaxation on depression and quality of life.	27 participants	Non-experimental design, Psychometric scales, Physiological instruments for evaluating the effects of treatment.	Anxiety, worry, and mental quality of life scores showed a statistically significant improvement for participants in both groups. However, the comparison between treatment methods did not reveal significant differences, although the dropout rate was higher in the standard group (without VR). In the VR group, the level of presence was considered satisfactory.
2. Navarro-Haro et al. (2019).	The main goal of this research was to evaluate the impact of two mindfulness-based intervention methods (MBI) – an MBI in a group setting and the same MBI enhanced with 10 minutes of virtual reality training based on dialectical behavior therapy (VR DBTR Mindfulness) – in reducing symptoms of generalized anxiety disorder (GAD).	42 participants	Non-experimental Design, Self-report Scale GAD-7	After completing the treatment, both patient groups showed significant improvements in generalized anxiety, as assessed through the GAD-7 scale, using mixed regression models. Both groups made significant progress in reducing anxiety, depression, difficulties in emotion regulation, and self-awareness. Patients who received an additional 10 minutes of mindfulness skills training through virtual reality showed greater treatment adherence compared to those who only received the standard intervention. Although more studies are needed to confirm these results, this pilot study suggests that the standard intervention is effective in treating generalized anxiety, and mindfulness skills through virtual reality may help reduce treatment dropout.
3. Popa et al.	The goal of the research was to compare the effectiveness of the standard CBT protocol, focused on managing worries, dysfunctional beliefs, and intolerance to uncertainty, with an integrative and multimodal CBT intervention enhanced by the use of Virtual Reality (VR).	66 participants	Non-experimental Design, The Hamilton Rating Scale for Anxiety, Interview for measuring the intensity of anxiety symptoms, The Penn State Worry Questionnaire (PSWQ) - a self-report scale that	Both interventions had significant effects on primary and secondary outcomes ($p < 0.001$). However, CBT had greater effects on anxiety and worry compared to CBT with virtual reality (IM-VRCBT). Both methods were effective in reducing anxiety symptoms. In the case of cognitive dysfunctions, such as worry, standard CBT showed better results than IM-VRCBT. The conclusion is that virtual reality can

			measures the tendency for frequent worry	be integrated into CBT for the treatment of generalized anxiety disorder.
4 . Wang et al., (2020).	The aim of this study was to investigate the psychological and physiological responses of patients with generalized anxiety disorder (GAD) after cycling in a virtual environment that includes natural imagery.	77 participants	Non-experimental Design, Self-report scales for psychological concepts: Restorative Quality, Perceived Stress, Satisfaction, Data collected through electroencephalography (EEG)	Alpha activity in the electroencephalogram, perceived stress, and levels of restorative quality and satisfaction were assessed at the beginning and after 20 minutes of moderate aerobic exercise. The results showed that both the groups with virtual natural landscapes (VN) and those with virtual abstract paintings (VAP) had significantly higher alpha activity post-exercise. The VN group showed higher levels of stress reduction, recovery quality, and personal satisfaction. The study results indicate that physical exercise in a natural setting has positive effects on reducing anxiety and improving quality of life for individuals diagnosed with generalized anxiety disorder.
5. Guitard et al., (2019).	The purpose of this research was to investigate whether a standardized scenario recreated in virtual reality (VR) would generate anxiety and negative affect, and how this compares to the traditional method of imagining a personalized catastrophic scenario.	28 participants	Non-experimental Design, Multiple questionnaires were used to measure several concepts: (STAI-Y1 - state anxiety, PANAS - positive and negative affect, IUS - intolerance to uncertainty, WhyWorry-II - positive beliefs about worry, Immersive Tendencies Questionnaire - tendency to be present in the experience)	Comparing the two exposure situations (a sample of 28 participants was exposed to two situations: one in virtual reality with a standardized scenario and the other through imagination with a personalized catastrophic scenario), it was found that there were no significant differences between the two. The scenario using virtual reality induced anxiety at the moment of exposure, which suggests that this tool can be used in therapy for exposure to anxiety-provoking situations to reduce anxiety in individuals with generalized anxiety disorder.
6. Orr et al. (2023)	The main goal was to determine whether virtual treatment for mental health was feasible and safe, obtaining measurable results at multiple points (a retrospective analysis of the medical records of individuals who suffered from stress and anxiety and were predominantly treated in the metaverse using virtual reality was conducted).	61 participants	Non-experimental Design, Likert scales for measuring effort and client satisfaction with the use of virtual reality, a series of questionnaires and inventories for measuring anxiety, stress, pain, fatigue, disability, and sleep.	The study results showed significant improvements in health throughout the virtual reality treatment. Symptoms of generalized anxiety decreased by 34.4%, pain severity decreased by 40.1%, and pain interference decreased by 46.4%. This treatment option may improve the way treatment is delivered at home for the targeted individuals and offers added benefits by reducing travel and the costs people incur for treatment.

7. Repetto et al. (2013)	A between subject study was conducted, involving 25 patients with GAD, to assess the effectiveness of the proposed approach: limiting VR tools to the therapist's office constitutes a restriction, especially regarding the treatment of anxiety disorders. This experiment evaluated the possibility of using an omnipresent approach, based on a virtual environment loaded onto a mobile phone, for the treatment of GAD. A critical issue associated with using virtual reality in the treatment of anxiety disorders is the absence of a virtual reality system integrated into the patient's daily life context. This paper presented a clinical protocol for the treatment of generalized anxiety disorder (GAD) based on the ubiquitous use of an enhanced VR system with biofeedback. The protocol includes the use of a mobile exposure system that allows patients to experience virtual reality in an outpatient setting.	25 participant	Non-experimental Design, Semi-structured interview, psychometric questionnaires: Beck Anxiety Inventory, State-Trait Anxiety Inventory Form Y-2, Hamilton Anxiety Rating Scale	To counteract the limitation of virtual reality being restricted to the therapist's office, the study proposed a treatment that also includes the use of mobile phones. Thus, "Mergem Virtual" can be used and installed on it. One of the study's results showed that virtual reality can be successfully used in the treatment of generalized anxiety disorder. The second result indicated that 91% of patients were very satisfied with using the mobile phone because they were able to develop the necessary relaxation skills in the absence of the therapist.
8. Gorini et al. (2010).	The project aims to improve the treatment of generalized anxiety disorder (GAD) through the use of advanced technologies such as virtual reality, biofeedback, and mobile phones. The objective is to measure the impact of relaxation with virtual reality on GAD.	27 participants	Non-experimental Design, Semi-structured interview to identify generalized anxiety disorder according to DSM-5 criteria, Penn State Worry Questionnaire, Beck Anxiety Inventory, State-Trait Anxiety Inventory Form Y-2, Hamilton Anxiety Rating Scale	The study supports the use of virtual reality for individuals with generalized anxiety disorder and introduces the idea of using the phone as an anchor for sessions with the therapist. Additionally, the feedback provided by the patients' physiological responses can be a good indicator for real-time adjustments of the virtual environment. This way, the treatment can be as personalized and effective as possible.
9. Wang et al., (2019).	The aim of this study was to explore the potential of VR in helping clinical medicine management of GAD.	60 participants	Self-report scales for psychological concepts: Restorative Quality, Perceived Stress, Satisfaction, Data collected through electroencephalography (EEG)	The study found that patients in the projection-based VR group exhibited higher alpha values and lower skin galvanic responses (GSR) after cycling, compared to the control group. These results suggest that cycling in the projection-based VR environment may lead to a higher exercise intensity and a reduction in perceived emotional stress among patients with GAD.

5. Discussions

5.1. The Role of Virtual Reality in Treatments

Thanks to its ability to create controlled, immersive environments, VR has become a valuable tool in psychotherapeutic treatments. In VR environments, patients experience and manage anxiety-inducing situations, feeling safer and having a stronger sense of control.

For treating GAD, VR is used for gradual exposure to anxiety-inducing stimuli. VR provides a space

where patients can learn to regulate anxious responses without real-life consequences. For instance, a study showed that using VR to expose patients with social anxiety to social scenarios significantly reduced anxiety symptoms. Through VR, patients faced scenarios like attending a party or presenting in front of an audience, allowing them to practice anxiety-management skills in a controlled environment. This technique can also be adapted for GAD patients, exposing them to specific scenarios that cause worry, such as managing workplace tasks or daily interactions.

Concrete examples of VR integration in therapy include:

- *Exposure to Anxiety-Inducing Stimuli*: In exposure therapy, VR can recreate anxiety-provoking scenarios. For instance, a patient with a fear of public speaking can be placed in a virtual environment where they give a speech to a virtual audience. This gradual, repeated exposure helps desensitize the patient to stimuli and reduces anxiety.
- *Simulation of Everyday Scenarios*: VR can simulate everyday anxiety-inducing situations, such as shopping, using public transportation, or social interactions, customized to each patient's needs to allow them to practice coping techniques in a controlled setting.
- *Guided Meditation and Relaxation Techniques*: Therapists can guide patients through meditation and relaxation sessions in calming virtual environments, such as a quiet beach or a green forest, enhancing relaxation effects and helping patients reduce anxiety and stress.
- *Augmented CBT*: VR can augment CBT by offering virtual scenarios for behavioral exposure and cognitive restructuring. For example, a patient may face a stressful workplace scenario in VR, allowing them to practice and refine cognitive and behavioral responses.

5.2. Characteristics of Generalized Anxiety Disorder (GAD)

GAD is characterized by excessive and uncontrollable worry, heightened anxiety, restlessness, fatigue, irritability, muscle tension, insomnia, and concentration difficulties. GAD significantly impacts patients' quality of life and daily functioning, often requiring long-term treatment for symptom management.

VR is useful in GAD treatment by providing controlled, repeatable exposure to anxiety-inducing stimuli. For example, patients can be virtually exposed to everyday stressors, like managing finances or social interactions, allowing them to practice coping techniques and gradually reduce anxiety. One study found that VR-based exposure to stressful situations significantly reduced anxiety symptoms in GAD patients.

Key features and applications of VR in GAD treatment include:

- *Gradual, Repeatable Exposure*: VR allows the creation of standardized, controlled scenarios that can be repeated as needed. For example, GAD patients can virtually face daily stressors, like work meetings or time management, to practice and improve coping skills.
- *Safe Environments for Practicing Relaxation Techniques*: VR provides a safe space where patients can practice relaxation techniques like diaphragmatic breathing or progressive muscle relaxation, often in soothing virtual landscapes, amplifying therapeutic effects and helping reduce anxiety.
- *Personalized Treatment*: VR allows for customization of therapeutic scenarios based on each patient's specific needs. For instance, a patient with social anxiety can be exposed to social interaction scenarios, helping them develop social skills in a controlled environment.

5.3. The Effectiveness of CBT

CBT is considered the gold standard for treating GAD, integrating techniques for cognitive restructuring, problem-solving, behavioral exposure, and relaxation. Numerous clinical studies have demonstrated CBT's effectiveness in reducing GAD symptoms, improving daily functioning, and enhancing patients' quality of life.

One study compared standard CBT to VR-augmented CBT, finding both methods effective in reducing GAD symptoms. However, standard CBT showed greater effects on cognitive dysfunctions like excessive worry, while VR proved effective in exposing patients to anxiety-inducing situations safely and in a controlled manner.

The motivation for using VR in CBT comes from its unique benefits, such as customizable and controlled scenarios, increased accessibility, and potential to enhance treatment adherence. For instance, patients unable to attend traditional therapy

sessions due to distance or schedules can benefit from self-guided CBT programs in VR, facilitating access to treatment.

5.4. Self-Regulation Skills

Self-regulation is essential for managing GAD, involving the development of diverse skills to cope with stress and anxiety. These skills include:

- *Recognizing and Restructuring Dysfunctional Thoughts*: Patients learn to identify automatic negative thoughts and replace them with more realistic, constructive ones.
- *Relaxation Techniques*: Techniques like diaphragmatic breathing, progressive muscle relaxation, and mindfulness meditation reduce muscle tension and anxiety.
- *Time and Stress Management Strategies*: These strategies include efficient activity planning, task prioritization, and problem-solving techniques.

By integrating these skills into VR treatment, patients can practice repeatedly and in a safe environment, thereby strengthening self-regulation skills. For example, a patient can practice relaxation techniques in a calm, controlled virtual environment, which may improve their ability to apply these techniques in real-life stressful situations.

5.5. Effective Therapies for Treating Generalized Anxiety Disorder

Alongside CBT, other effective GAD therapies that can benefit from VR include:

- *Exposure Therapy*: VR enables realistic scenarios where patients can gradually face their fears. For example, a GAD patient may be exposed to daily stressors like public speaking or attending meetings in a controlled virtual environment, helping to desensitize and reduce anxiety reactions.
- *Guided Meditation and Relaxation Techniques*: VR provides immersive environments for practicing mindfulness and other relaxation techniques. Patients may be guided through meditations in calming virtual settings, like a beach or forest, enhancing relaxation efficiency and stress reduction.
- *VR-Assisted Biofeedback*: This therapy combines biofeedback with VR to help patients monitor and regulate physiological responses to stress. Patients can view real-time bodily reactions to different stimuli and learn to control anxiety responses through breathing and relaxation techniques.

5.6. Limitations

The limitations identified in this systematic review, which included 9 studies, vary. The main limitations are:

1. *Non-Experimental Design and Methodological Inconsistency*: Most studies in the review used non-experimental designs, such as observational or pilot studies, which limit the ability to draw definitive conclusions or establish causality. This is due to the lack of randomized control groups and other rigorous methodological procedures necessary for a clear assessment of VR's effectiveness compared to other treatments or placebos.

2. *Subjective and Psychometric Measures*: Many studies relied on self-report scales to assess GAD symptoms and other psychological variables. While useful for gathering subjective patient perceptions, these measures can be influenced by factors such as subjective interpretation or response bias. Additionally, not all studies used the same psychometric instruments, potentially affecting comparability and generalizability of results.

3. *Small and Variable Sample Sizes*: Most studies had relatively small samples, impacting the representativeness of results and the ability to generalize findings to larger or more diverse populations. Significant variations in sample characteristics (e.g., age, sex, symptom severity) could also influence results and their interpretation.

4. *Lack of Standardization in VR Interventions*: Each study used different VR technologies and implemented varying VR-based interventions. This makes direct comparison of results across studies difficult and limits the identification of specific VR elements that contribute to symptom improvement. Lack of standardization introduces variability and uncertainties in interpreting VR's effects on GAD treatment.

5. *Challenges in Integrating VR into Current Clinical Practice*: Although promising, the actual implementation of VR in clinical practice can be challenging due to technological costs, the need for continuous staff training, and the infrastructure required to support VR's effective and efficient use.

In conclusion, while there is promising evidence of VR's benefits in treating generalized anxiety disorder, it is essential to address these limitations to develop and implement more robust and generalizable VR interventions in clinical practice. Future studies should focus on using more rigorous methodologies,

standardizing VR procedures, and evaluating the long-term therapeutic effects of VR in various clinical and population contexts.

6. Conclusions

Following an analysis of various studies, an encouraging perspective emerges on the use of virtual reality (VR) in treating generalized anxiety disorder (GAD). These studies highlight numerous therapeutic benefits of VR, showing significant improvements in generalized anxiety, depression, and quality of life among participants. Simultaneously, important considerations have been identified that could guide future research directions and clinical applications.

A key takeaway from the studies is VR's positive impact on patients' psychological and physiological responses. Research shows that using VR in physical exercises and exposure to anxiety-inducing stimuli can contribute to reducing perceived anxiety levels and improving overall well-being. Patients who participated in VR interventions often demonstrated better treatment adherence and greater symptom reduction compared to those who followed traditional treatment methods.

Furthermore, using VR in CBT has opened new possibilities for tailoring treatment to individual patient needs. Integrating VR into CBT allows for controlled and gradual exposure to anxiety-provoking situations, thereby facilitating the learning of emotional regulation and stress management techniques within a safe and controlled environment.

However, research has also revealed challenges associated with VR in clinical practice. For instance, one concern is the need to adapt VR technologies to ensure an optimal and accessible experience for patients, particularly for at-home therapy or outpatient settings. It is also crucial to continue exploring the specific mechanisms through which VR affects mental health and to identify factors that may influence the effectiveness of these interventions.

In conclusion, these studies demonstrate that virtual reality is not only a promising technology but also a valuable resource in treating anxiety disorders. Continued VR technology advancements and rigorous research will be essential to maximizing the benefits of this technology, providing patients with improved opportunities for recovery and quality of life.

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An Analyze of the Relationship Between Students' Motivation, Self-efficacy, and Academic Resilience

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An Analyze of the Relationship Between Students' Motivation, Self-efficacy, and Academic Resilience

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Abstract

Academic resilience represents a critical variable in educational success, reflecting students' ability to adapt and thrive in the face of academic challenges. Numerous studies have addressed the issue of academic resilience, as understanding the mechanisms underlying academic resilience as essential for the development of effective interventions to support students. Academic resilience is a multifactorial construct, influenced by personal, social and contextual factors, which needs a complex approach. Being an essential competence for the entire life, the academic environment provides the fertile ground for its development. The present research investigates the extent to which perceived self-efficacy and motivation - both intrinsic and extrinsic - impact students' academic resilience. The study aims to explore how those psychological constructs interact to support adaptive responses in demanding academic environments. A structural equation model was developed and tested on a sample of university students. The findings reveal that academic self-efficacy and intrinsic motivation has a significant and direct positive effect on academic resilience. At the same time, even extrinsic motivation seems to influence negatively the academic resilience, it resulted that it has no direct significant influence on academic resilience. The results underscore the importance of fostering self-efficacy and intrinsic motivation in educational settings, offering critical psycho-pedagogical insights for enhancing students' adaptive capacities.

Keywords:
academic resilience, academic self-efficacy, intrinsic motivation, extrinsic motivation

1. Introduction

Motivation, self-efficacy, and academic resilience represent important variables that significantly influence academic success. Those factors are interconnected and create a dynamic interplay that supports students' ability to overcome challenges, be consistent in their studies, and achieve their academic goals.

Motivation refers to the internal drive or desire that propels individuals to engage in a particular behavior or activity (learning, for example) (Morris et al., 2022), being the psychological process that launches, guides, and maintains goal-oriented actions (Zeidner et al., 2000). It encompasses a series of aspects which include *intrinsic motivation* (driven by internal rewards, such as enjoyment curiosity, and interest) and *extrinsic motivation* (driven by external rewards, like grades, praise or material reward). Motivation plays an important role in academic success by influencing students' effort, perseverance, and engagement in learning activities (Steinmayr et al., 2019).

Self-efficacy is defined as the belief in one's ability to realize a specific task or achieve a particular goal successfully. It represents a key component of the self-concept and plays a crucial role in academic performance. In this respect, students with high self-efficacy are more likely to set challenging goals, resist when facing obstacles, and adopt effective learning strategies (Basileo et al., 2024).

Academic resilience is considered the ability to bounce back from academic setbacks and adversity. It involves a mixture of cognitive, emotional, and behavioral factors that enable students to confront challenges, keep a positive attitude, and continue striving for success. Resilient students are better enabled to manage stress, regulate their emotions, and seek support when needed (Flores-Builes & Andrés-Roqueta, 2023).

This research aimed to understand the extent to which motivation, self-efficacy, and academic resilience are correlated.

2. Theoretical foundation

Trying to analyze the correlation between the abovementioned variables, several researchers illustrated a series of conclusions.

Motivation is closely related to self-determination. People who are intrinsically motivated, are engaged in activities for their pleasure and satisfaction. As Deci et al. (1991) showed, intrinsically motivated behaviors represent the prototypes of self-determination. Motivation and self-efficacy are positively correlated - more motivated students tend to have higher levels of self-efficacy, and vice versa. This suggests that motivation can boost self-efficacy, and self-efficacy can enhance motivation (Li et al., 2023). On the other hand, self-efficacy represents a strong predictor of academic resilience. Students with higher self-efficacy are more likely to exhibit resilience when facing academic challenges because they believe in their ability to overcome obstacles, and find effective coping strategies (Uygur et al., 2023). Motivation and self-efficacy mediate the relationship between parenting styles and academic resilience. Positive parenting practices, such as authoritative parenting, can foster students' motivation and self-efficacy, which contribute to their academic resilience (Shengyao et al., 2024).

Resilience is a complex, multifaceted construct (Cassidy, 2015) seen as the ability to optimally leverage internal and external resources to successfully overcome various obstacles and challenges (Pooley & Cohen, 2010). In academia, resilience is a strength or asset that can make the difference between success and failure, enabling students to overcome obstacles and achieve their goals. Resilience is also a valuable skill in the job market, where flexibility and adaptability are highly valued.

Martin and Marsh (2006) developed a model of academic resilience based on five dimensions (the 5-C model): confidence (self-efficacy), coordination (planning), control, composure (low anxiety), and commitment (persistence). Their study also found that academic resilience is a predictor of three key educational and psychological aspects: enjoyment of school, class participation, and general self-esteem.

Students' self-efficacy and academic motivation can be enhanced by a resilient environment. This fact helps students be more resilient in the university environment (Abdolrezapour et al., 2023). In this sense, motivation, self-efficacy, and academic resilience are interconnected variables that play a crucial role in academic success (Yang & Wang, 2022). By understanding the complex relation between the analyzed variables, educators and researchers can develop effective strategies to support students' academic development and well-being.

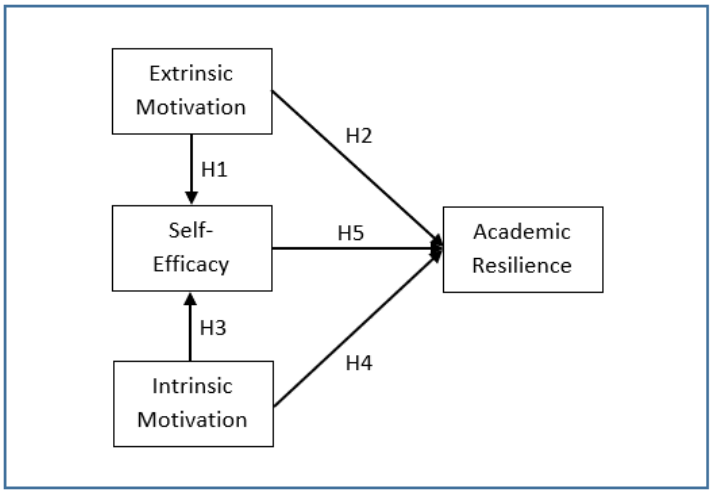
3. Research methodology

3.1. Research model and hypotheses

In general, the relationship between intrinsic motivation, extrinsic motivation, self-efficacy, and academic resilience is complex and generally considered as a multifaceted one (Rossi et al., 2020; Thorsen et al., 2021; Luther, 2022; Shengyao et al., 2024). As expressed in the studies, there is a strong positive correlation between intrinsic/extrinsic motivation and self-efficacy. Intrinsic motivation often leads to higher levels of self-efficacy and academic resilience, and extrinsic motivation can be used strategically to enhance self-efficacy, being (in general) balanced with intrinsic motivation. Self-efficacy plays a crucial role in building academic resilience and maintaining motivation. Academic resilience enables students to stay motivated and perseverant, even in critical situations.

Starting from the abovementioned considerations, a model was proposed taking into account - on the one hand - the interplay between extrinsic/intrinsic motivation and self-efficacy, and - on the other hand - the unidirectional relation between extrinsic/intrinsic motivation/self-efficacy and academic resilience. In this sense, those factors are interconnected and influence each other in various ways. The proposed research model is focused on self-efficacy with self-regulated learning and is illustrated in Figure 1.

Figure 1
Research model and hypotheses



The following hypotheses are tested in the study:

H1 - Extrinsic motivation has a significant influence on academic self-efficacy (EM → SE)

H2 - Extrinsic motivation has a significant influence on academic resilience (EM → AR)

H3 - Intrinsic motivation has a significant influence on academic self-efficacy (IM → SE)

H4 - Intrinsic motivation has a significant influence on academic resilience (IM → AR)

H5 - Academic self-efficacy has a significant influence on academic resilience (SE → AR)

The constructs and measures are presented in Table 1.

Table 1
Evaluation instrument

AR	**Academic resilience**
AR1	I believe I am mentally tough when it comes to exams
AR2	I don't let study stress get top on of me
AR3	I believe I am good at dealing with schoolwork pressures
SEA	**Self-efficacy with self-regulated learning**
SEA1	How well can you finish homework assignments by deadlines?
SEA2	How well can you organize your schoolwork?
SEA3	How well can you concentrate on school subjects?
EM	**Extrinsic motivation**
EM1	I am motivated to study because I want to have a "good life" later on
EM2	I am motivated to study since graduating the college is important
EM3	I am motivated to study by the possibility of finding a high-paying job later on
IM	**Intrinsic motivation**
IM1	I am motivated to study by the pleasure and satisfaction of learning new things
IM2	I am motivated to study by the feelings I experience when I am communicating new things to others
IM3	I am motivated to study by the satisfaction I feel when I am accomplishing difficult academic activities

3.2 Method and sample

In order to collect the necessary research data, a questionnaire was administered to the students of Valahia University of Târgoviște in the first semester of the academic year 2023-2024. Participation in the survey was voluntary and anonymous. From 196 initial responses, 2 questionnaires were incomplete and excluded, resulting in a final sample of 194 participants, that included 108 females and 86 males. All respondents were preparing for a teaching career, being enrolled in the university's psycho-pedagogical training program.

In terms of age distribution, 62.9% of respondents were 19-29 years old, 13.4% (26 students) were 30-39 years old, and the remaining 23.7% (46 students) were 40 years of age or older. The students provided general information such as age, gender, faculty, specialization, year of study, and the discipline or course they were enrolled in. Subsequently, they rated specific items on a 5-point Likert scale.

Convergent validity has been assessed according to the recommended cut-off values (Fornell, & Larcker, 1981; Hair et al., 2006), as regards loadings magnitude (greater than 0.5), construct reliability (composite reliability, CR greater than 0.70), and average variance extracted (AVE, greater than 0.5). Discriminant validity has been assessed through the squared correlation test (Fornell & Larcker, 1981).

The model fit with the data has been assessed by using the following goodness of fit indices (Hu & Bentler, 1998; Hair et al., 2006): chi-square (χ^2), degrees of freedom (DF), χ^2/DF ratio, comparative fit index (CFI), non-normed fit index (NNFI), the goodness of fit index (GFI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR).

The model was analyzed with Lisrel 9.3 for Windows (Mels, 2006), using the maximum likelihood estimation method.

3.3. Model testing results

The model has been analyzed for unidimensionality and convergent validity. The descriptive statistics and factor loadings are presented in Table 2.

All factor loadings are over 0.6 thus showing unidimensionality of constructs. The mean values are over the neutral value of 3.00 and suggest a positive perception of academic resilience and self-efficacy and a high perception of motivation to learn. As could be noticed, extrinsic motivation is higher than intrinsic motivation (4.36 vs. 4.26 as regards the mean value of the construct).

Table 2
Descriptive and factor loadings (N=326)

Item	Mean	SD	Loading
AR1	3.78	0.99	0.72
AR2	3.44	1.17	0.58
AR3	3.89	0.99	0.80
SEA1	3.80	1.04	0.70
SEA2	3.77	0.97	0.88
SEA3	3.81	0.88	0.70
EM1	4.37	0.79	0.79
EM2	4.44	0.77	0.79
EM3	4.27	0.91	0.75
IM1	4.45	0.77	0.78
IM2	4.19	0.92	0.84
IM3	4.14	0.94	0.72

The convergent validity is considered very good since, with one small exception, the composite reliability (CR) and average variance extracted (AVE) are over the cut-off values of 0.7, respectively 0.5 (Fornell & Larcker, 1981). The correlation between extrinsic and intrinsic motivation exceeds the square root of the average variance extracted. This is explained by the fact that these are dimensions of the same global factor (motivation) so it is expected to correlate, so discriminant validity is not relevant in this case (Koufteros et al., 2009). For the rest of the constructs, the square root of AVE exceeds the correlation between constructs which is evidence for discriminant validity.

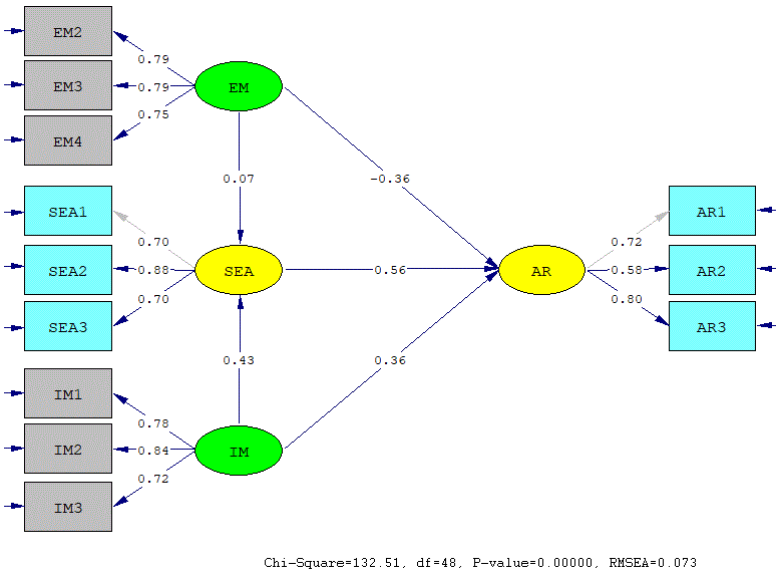
Table 3
Convergent, and discriminant validity (N=326)

	CR	AVE	AR	SEA	EM	IM
AR	0.746	0.499	**0.706**			
SEA	0.807	0.585	0.577	**0.765**		
EM	0.820	0.604	0.189	0.431	**0.777**	
IM	0.824	0.611	0.322	0.483	0.854	**0.782**

Note: The bold diagonal numbers represent the square root of AVE

The fit of the structural model with the data is good, as shown by GOF indices: χ^2 =132.51, *df*=48, χ^2/df=2.76, CFI=0.950, NNFI=0.931, GFI=0.939, RMSEA=0.073, SRMR=0.052. The model estimation results are presented in Figure 2.

Figure 2
Model estimation results – first sample (N=146)



Hypothesis H1 is not supported since extrinsic motivation has a small and non-significant positive influence on self-efficacy with self-regulated. Intrinsic motivation has a positive influence on self-efficacy (β=0.43, p=0.010) so H3 is supported. The rest of the hypotheses are also supported since academic resilience is negatively influenced by extrinsic motivation (β=-0.36, p=0.036), and positively influenced by intrinsic motivation (β=0.36, p=0.042) and self-efficacy (β=0.56, p=0.000).

The model explains a 37% variance in self-efficacy with self-regulated learning and 23.5% in academic resilience.

4. Discussions

This research contributes with an empirically validated model that explains the relationship between extrinsic/intrinsic motivation - self-efficacy - academic resilience.

The first hypothesis - *Extrinsic motivation has a significant influence on academic self-efficacy (EM → SE)* - was not supported, the results of statistical analysis did not indicate a significant relationship between extrinsic motivation and academic self-efficacy. Those findings suggest that, in the context of the present study, extrinsic motivation is not a significant predictor of perceived academic self-efficacy. However, it is possible that other variables, such as intrinsic motivation play a more important role. Future research should explore those issues in more depth.

The second hypothesis - *Extrinsic motivation has a significant influence on academic resilience (EM →*

AR) - was supported, but the relationship between extrinsic motivation and academic resilience is a negative one. This result suggests that increased reliance on external rewards may reduce students' ability to cope with academic difficulties. This is also explained by Deci et al. (1991), who state that excessive extrinsic motivation may undermine perceptions of autonomy and competence, thereby affecting resilience. The results emphasize the need to encourage intrinsic motivation in educational settings to support the development of academic resilience. Future research should explore the role of intermediate variables, such as stress or coping strategies, in this relationship. The result is valuable because it indicates that extrinsic motivation needs to be carefully managed in educational settings. Rather than being excluded, it should be complemented by strategies that promote intrinsic motivation and support students' emotional and psychological adaptability to challenges.

The third hypothesis - *Intrinsic motivation has a significant influence on academic self-efficacy (IM → SE)* - was confirmed. This positive relationship suggests that students who learn out of interest and curiosity show greater confidence in their own academic abilities. Those findings are sustained by Deci et al. (1991), who indicate that satisfaction of psychological needs for competence and autonomy support perceptions of self-efficacy. This result highlights the importance of cultivating intrinsic motivation in educational settings to improve both academic engagement and academic performance.

The fourth hypothesis - *Intrinsic motivation has a significant influence on academic resilience (IM → AR)* - was supported. This result emphasizes that intrinsic motivation is an important condition in developing students' ability to overcome obstacles and maintain academic performance under stressful conditions, in line with numerous theories suggesting that internal motivation is a key factor in developing resilience and long-term success in education. Thus, it is recommended that educational environments facilitate the development of students' intrinsic motivation.

The fifth hypothesis - *Academic self-efficacy has a significant influence on academic resilience (SE → AR)* - was confirmed. This result indicates that students who have a high level of academic self-efficacy tend to be more resilient in the face of academic difficulties, as confidence in their own abilities contributes to a greater ability to cope with stress, overcome failures and persevere in the educational context. Thus, academic self-efficacy is a protective factor against academic challenges and difficulties. These findings are consistent with previous studies (Bandura, 1993, 2006), which have shown that self-efficacy is an important predictor of adaptive behaviors and academic success.

Since this is an exploratory study, there are some inherent limitations. The first limitation of this study is the sample of students used in the research, which may not be representative of the entire student population, as they are students from a single university. Another limitation may be related to the fact that students involved in the research are enrolled in a program for a teaching career, so the constructs proposed in the research model may have deeper meanings for them as future teachers.

6. Conclusions

The results of the research provide useful insights into the relations between the four important variables for learning in the academic environment: intrinsic motivation, extrinsic motivation, academic resilience and academic self-efficacy. In any educational context, motivation is the key factor that activates and sustains the learning process. The theoretical model proposed and discussed in this research indicates positive correlations and significant influences of intrinsic motivation on academic self-efficacy and academic resilience, academic self-efficacy has a significant influence on academic resilience, extrinsic motivation has a significant influence on academic resilience, but extrinsic motivation has not been shown to have a significant influence on academic self-efficacy.

Students who are academically motivated tend to view education and learning as intrinsically valuable and meaningful. They recognize the importance of academic achievements not just as a means to external rewards, such as grades or career prospects, but as essential for personal growth and intellectual development. This perspective fosters a genuine enthusiasm for acquiring knowledge and mastering new skills, which translates into a positive attitude toward school and educational activities.

The students often derive enjoyment from the learning process itself, finding satisfaction in exploring ideas, solving problems, and overcoming challenges. Their intrinsic interest in learning encourages them to actively participate in academic tasks, whether it involves class discussions,

completing assignments, or pursuing independent study.

Additionally, academically motivated individuals tend to exhibit higher levels of perseverance and resilience when faced with difficulties, as they are driven by a deeper sense of purpose and curiosity. They are engaged not only for immediate results but also for the long-term benefits of education, which include personal fulfillment, critical thinking skills, and a broader understanding of the world. Their positive engagement often sets the stage for sustained academic success and a lifelong commitment to learning.

Another key dimension highlighted by the research findings is the concept of academic resilience. This is the ability of students to cope successfully with challenges and obstacles in the academic environment while maintaining their motivation, performance and engagement in learning.

Academic resilience involves a combination of skills and attitudes that enable students to cope effectively with difficulties such as exam pressure, heavy workloads, negative feedback or potential failure. Moreover, this dimension is not just about overcoming difficulties but also about using their experiences as opportunities for learning and personal development. A defining aspect of academic resilience is the mental and emotional flexibility, which helps students to adapt their learning strategies to each faced situation. For example, resilient students tend to be more likely to seek social support, adopt effective stress management strategies, and show increased confidence in their ability to overcome obstacles. This dimension is critical to long-term success as it supports students not only in achieving academic performance but also in developing valuable life skills.

Research has also shown that extrinsic motivation characterized by external rewards (such as grades, prizes, parental approval or avoidance of punishment) does not directly and significantly influence the student's confidence in his/her own ability to learn and succeed academically. This finding carries several psycho-pedagogical implications, particularly in the design and implementation of educational strategies and interventions. An educational approach focused on cultivating intrinsic motivation can have a far more positive impact on a student's self-efficacy. Educators should design learning environments that prioritize intrinsic motivators, such as curiosity, mastery, and personal growth, over external rewards. This fact has the potential to produce not only better academic outcomes but also students who are more resilient, self-confident, and prepared to navigate challenges independently in the future.

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Curriculum Design Using the Holland Theory of Vocational Interests

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Curriculum Design Using the Holland Theory of Vocational Interests

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Abstract

The article explores the application of Holland's Theory of Vocational Interests in designing pre-university curricula, emphasizing personalized and relevant educational experiences. The curriculum is conceptualized as a structured "plan for learning," requiring balance and coherence across levels: international, national, school-specific, classroom, and individual. It highlights the significance of integrating students' vocational profiles (RIASEC) into teaching strategies to foster engagement, motivation, and skill development. The study outlines a multi-step approach, including profiling students' vocational interests, analyzing interest types, and creatively designing learning situations aligned with these profiles. Case studies from Romanian pilot programs illustrate the effectiveness of this model, highlighting adaptations for frontal, group, and individual teaching formats. The approach facilitates the development of career-relevant skills and enhances educational inclusivity. Ultimately, the implementation of Holland's theory contributes to a dynamic learning environments, better decision-making for students' academic and career paths, and the preparation of active, competent citizens for a rapidly evolving society.

Keywords:
vocational interests, Curriculum design, RIASEC model, personalized learning, educational inclusivity

1. Introduction

Curricular design represents the process of planning, organizing, and developing educational content to address students' learning needs and societal demands. It includes selecting learning objectives, structuring content, choosing teaching strategies, and evaluation methods, with the aim of creating a coherent and flexible framework for the educational process. Moreover, the process of curricular design involves successive stages, such as analyzing the educational context in which it takes place, considering students' needs, examining educational standards, and addressing labor market requirements. This is followed by defining educational objectives, selecting content, and organizing it into a logical structure, in alignment with the principles of progressivity and interconnectedness. The final stages involve selecting teaching and assessment methods that facilitate the achievement of the established objectives.

A well-designed curriculum brings numerous benefits. First, it contributes to improving the quality of education through more efficient organization of the learning process. Additionally, students benefit from a learner-centered approach that stimulates critical thinking and creativity. Second, it facilitates the adaptation of education to the demands of contemporary society, preparing students for future challenges (Zajda, 2024). Furthermore, a flexible curricular design allows the integration of new technologies and adaptation to the rapid changes in the educational field. We consider that curricular design is not merely a tool for organizing education but also a strategic process through which schools can be transformed into relevant and inclusive learning environments, equipping students for a constantly evolving society.

The way in which a curriculum for pre-university education is designed depends on the designers' pedagogical conceptions of how students learn and social responsibility, the role of the foundations of knowledge, professional values and the development of educational services (Grant, 2010).

In the educational context, since learning occupies a central position, the term curriculum will be approached with the meaning of a trajectory or a "plan for learning" (Taba, 1962). This approach cuts to the essence of all other definitions, allowing adaptations for multiple educational levels, diversified contexts and specific representations. In order to clarify the perspective referred to, contextual particularization is always necessary in discussions on this topic.

Building on this, a differentiation between the different levels of curriculum has proven to be very useful in discussions about curricular activities

(educational policy, design and development, evaluation and implementation). Thus we have:

- International or supra-level
- System/society/nation/state or macro level (e.g. national programs or general objectives)
- School/institution or meso level, e.g. school specific curriculum
- Classroom or micro level, e.g. textbooks, teaching materials
- Individual/personal or nano level.

The supra-level refers to international debates or agreements on the aims and quality of education, based on the analysis of information from the results of international comparative studies (e.g. PISA or TIMSS), and curriculum development at this level is usually of a 'generic' nature, whereas specific approaches are more applicable to the mezzo and micro levels. Furthermore, the curriculum development process can take place in a narrow context (the development of a specific curriculum product), or a broad context (a long-term, continuous process of curriculum improvement, including aspects of educational change).

2. Theoretical foundation

To address issues related to curriculum decision-making and implementation, a broader perspective on the curriculum development process is often necessary. This process is usually complex, long-term and cyclical, involving many actors and participants. In it, the reasons and needs for change are identified, ideas are concretized into programs and materials, and efforts are directed towards the actual implementation of the desired changes in practice (Plomp, 2013).

The curriculum development process should ask the question what is the purpose of the educational program, how will the program be organized, what experiences will promote those purposes, and how can we determine if the purposes are being achieved? (O neill, 2015)

In educational reality, curricula can be represented in various forms, knowledge of which is mandatory when trying to understand curriculum change efforts. One proposed denomination of the three levels of curriculum is the 'intended', 'implemented' and 'realized' curriculum (van den Akker, 2003).

We believe that the main challenge in curriculum improvement is to create balance and coherence among the multiple components of a curriculum, components that include three major planning elements: content, purpose, and learning organization. However, the difficulties encountered in curriculum design and implementation have indicated the need to pay more attention to a more elaborate list of components. These components, 10 in number, consist of specific questions related to the planning of student learning (Van den Akker et al., 2003).

- Rationale or Vision / *Why are they learning?*
- Aims & Objectves / *Toward which goals are they learning?*
- Content / *What are they learning?*
- Learning activities / *How are they learning?*
- Teacher role / *How is the teacher facilitating learning?*
- Materials & Resources / *With what are they learning?*
- Grouping / *With whom are they learning?*
- Location / *Where are they learning?*
- Time / *When are they learning?*
- Assessment / *How to measure how far learning has progressed?*

Interest is a powerful motivational factor that stimulates learning, influences academic pathways and contributes significantly to academic success. We can define it as a psychological state of concentration and attraction to a particular subject or object, but also as a long-term predisposition to return to that subject repeatedly.

The four-phase model of interest development (Harackiewicz et al. 2016) combines these perspectives and provides guidelines for interventions aimed at stimulating interest and capitalizing on existing interests. Effective strategies to amplify interest include:

- creating attention-grabbing environments,
- using contexts that activate prior personal interests,
- problem-based learning, and
- emphasizing the practical value of the material studied.

Interests represent a person's crystallized preferences for particular areas of knowledge or activity and are manifested in appropriation

behaviours towards specific activities and imply that there is as much overlap as possible between preferences and specific activities. The greater the degree of overlap between preferences and activity, the greater the satisfaction, motivation and performance (Băban, 2001; Miclea & Lemeni, 2010).

The teaching model, based on occupational interests (Holland), has an impact on all the structural elements of the learning situation (Campbell & Holland, 1972), facilitating the development of each student's intellectual potential/skills by linking them to specific vocational interests (realistic, investigative, artistic, social, entrepreneurial, conventional).

Instructional activity designed in accordance with specific occupational interests facilitates the practice of career specific skills and knowledge of specific occupational fields (Tracey & Rounds, 1972).

Individualized and personalized pedagogy based on occupational interests theory leads to adaptations in content, teaching strategy, work tasks, teaching assessment and interpersonal relationships in the classroom.

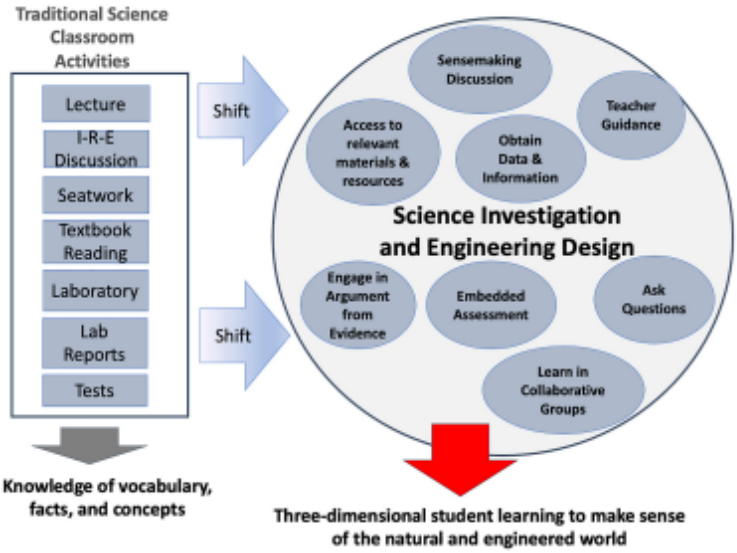
The differentiated treatment of students is based on their own occupational interests, and the organization of teaching activity can be carried out according to the occupational interest profile of the class (Gottfredson, 1993, Armstrong et al. 2008).Teaching activity based on occupational interests implies changes in all forms of organization of teaching activity (frontal, individual and group). In order to realize curriculum design based on the theory of occupational interests (Holland) it is necessary to go through several stages

2.1. Conceptual framework of a curricular design– a possible model

The conceptual framework described was developed and implemented at the University of Utah by Calabrese et al. (2023). They worked on a curricular program called "solutioning", which combines scientific investigation and engineering design to foster students' interest and motivation in STEM learning. The model was applied in a study conducted at the middle school level, which served as contexts for testing and evaluating the program's effectiveness. Anchored in the principles developed by the National Academies of Science, Engineering, and Medicine (NASEM), the model is built upon the theoretical framework of the 5E learning cycle, adapted to include additional phases related to engineering and public education.

The conceptual framework described in the text focuses on integrating scientific investigation and engineering design as central elements of STEM learning, particularly in curriculum development. This approach emphasizes aligning scientific and engineering practices with core ideas and interconnected concepts, creating a three-dimensional learning structure.

Figure 1.
Curricular design – conceptual framework, Callabrese at all



A particular aspect of the framework is its emphasis on connecting STEM content to students' personal experiences, enhancing their engagement and helping them better understand real-world issues. The activities are designed to develop essential 21st-century skills such as collaboration, critical thinking, and creativity. In this context, motivation plays a central role, as it significantly influences students' learning outcomes and fosters their interest in STEM fields. Through practical and relevant activities, students develop a sense of belonging and identity as members of the scientific community, motivating them to explore further and consider careers in scientific and engineering fields.

The conceptual framework also includes four design features aimed at promoting interest and motivation, as defined by the National Academies of Science, Engineering, and Medicine (2019). The first feature involves offering students choices and autonomy, which increases their intrinsic motivation and sense of control over the learning process. The second feature is promoting personal relevance by connecting STEM concepts to students' interests and experiences. Additionally, the learning materials are structured to be challenging yet accessible, maintaining a balance between difficulty and the

possibility of success. Finally, the investigations are placed in socially and culturally relevant contexts, which helps students relate more effectively to the content and perceive it as meaningful.

Thus, this conceptual framework proposes a transformation of STEM education, shifting the focus from traditional passive learning methods to dynamic, problem-solving-based approaches that equip students with the skills and motivation to address complex global challenges.

2.2. Stages in conducting training based on the profile of occupational interests (RIASEC):

1. Getting to know the occupational interest profile of the student and the class by completing the Holland Interest Questionnaire. Interest profiling can be carried out in collaboration with the school counselor teacher, in which case the result of the investigation can also be used for career guidance activities. It is also useful to communicate the student's interest profile to the parents. The Holland Occupational Interests Questionnaire can be applied from grade 7 onwards.

2. The second important step is to analyze the significance of each type of occupational interest with the characteristics described in Holland's theory, the hexagonal model.

3. Analyzing the impact of Holland's theory on the construction of the learning situation requires creativity on the part of the teacher and the analysis of the particularities of the model at the level of all the constituent elements of the learning tasks.

3. Discussions

3.1. Applying Holland's occupational interest theory in the realization of curriculum design - case design

The following are the milestones of the realization of the didactic activity based on occupational interests, a model applied since the school year 2022/2023, in the National High School "Decebal" Deva, at the level of the 10th grade, in a Romanian pilot program, developed at national level - O.M. Nr. 4872/30.08.2022. The teachers benefited from curricular counseling through the Information and Curricular Counseling Service - Hunedoara County Center for Educational Resources and Assistance for the valorization of occupational interests in the realization of curricular design.

The configuration of the learning situation implies the analysis, the correlation with the specific contents of each school subject and with the profile of occupational interests of the class, the creativity of each teacher being the one that will influence and realize each lesson design/ didactic activity. Teaching evaluation is carried out in accordance with the teaching and learning process.

3.2. Frontal activity

The activity can be organized from the front, in this case the significant aspect to be taken into account by the teacher is the profile of occupational interests of the class (example: if the first dominant interest is Investigative, for the design of the learning situation the teacher should reflect on the questions related to this type of interest, following the model below).

In order to design and realize a frontal activity, in which the adaptation of the teaching-learning activity to the types of vocational interests (RIASEC) can be realized, the answers to the questions below can be a reference.

The questions are indicative, each teacher can configure the frontal activity according to the particularities of the class and school subject and the profile of occupational interests.

- How do you personalize the learning experience for students?
- How do you stimulate students' creativity?
- Is critical thinking facilitated?
- Can pupils understand the life relevance of the lesson (career, benefits in everyday life, applications in different areas of life)?
- How do you stimulate pupils' cooperation?
- How do you facilitate the manifestation of initiative?
- Have you designed learning experiences that involve hands-on experience?
- How do you facilitate communication?
- Have you designed independent activities, with limits of responsibility?

3.3. Differentiated teaching activities by groups, pairs

The curricular design in groups or pairs consists in analyzing the vocational profile of the class, after having previously questioned the students. The constitution of groups or pairs is realized according to the hexagonal model of Holland types. We give for example the class of 26 students: Investigative-6,

Artistic -4, Social-4, Enterprising -3, Conventional -4, Realistic-5.

The constitution of groups or pairs can be realized by forming pairs, groups formed by pupils who have the same dominant occupational interest or by combining the following two types of interests: Realistic and Investigative (RI), Artistic and Social (AS), Social and Enterprising (SE), Enterprising and Conventional (EC).

The work sacks assigned to each pair or group should result from reflection and analysis of the characteristics of each type of occupational interest (see Holland's Occupational Interest Theory).

3.4. Reflective questions for shaping the learning situation according to occupational interests Holland

Adapting learning situations to students' occupational interests represent o consistent component of modern educational processes. In our case, John Holland's theory of vocational interests provides a valuable framework for understanding how different personality types respond to various educational and professional environments. This framework identifies six types of vocational interests—Realistic, Investigative, Artistic, Social, Entrepreneurial, and Conventional—which can guide the personalization of learning experiences.

Each of these types has distinct characteristics and unique needs regarding the structure and content of educational activities. For example, individuals with a Realistic profile prefer practical, well-defined tasks, while those in the Artistic category are motivated by opportunities to express creativity and inventiveness. Investigative learning fosters intellectual curiosity and critical thinking, while Social types value interaction and collaboration. On the other hand, individuals with Entrepreneurial interests seek dynamic, competitive activities, while those with a Conventional orientation are drawn to well-structured and organized tasks.

The set of reflective questions presented for each vocational type serves to guide educators in designing learning situations that meet individual needs and preferences. These questions help assess how well learning activities promote the skills and values relevant to each personality type, thus contributing to the development of meaningful and personalized educational experiences. Integrating these principles into teaching practice can enhance student motivation, fostering both academic progress and long-term career orientation.

- ***REALIST***

Has the opportunity to do group projects?

Are there tangible learning goals?

What is the practical usefulness of the work tasks he/she is involved in?

Are limits of responsibilities set?

Is the time limits set in accomplishing work tasks?

Does he/she have the opportunity to work in pairs or groups with colleagues who have similar beliefs and values?

Do the learning content/tasks involve practical problem solving?

Has the opportunity to work with tools or machines?

- ***INVESTIGATIVE***

Is it able to work independently?

Has the opportunity to practice writing, research, analytical skills?

Has the opportunity to practice critical thinking?

Has the opportunity to practice new skills?

Is it intellectually challenged by the content?

Is there an opportunity to explore resources?

Is it individual reflection facilitated?

- ***ARTISTIC***

Is it able to use his/her imagination, creativity, inventiveness?

Is artistic reflection (deductive, analogical) facilitated?

Do they have the necessary materials to realize new artistic products?

Are there opportunities for reflection/contemplation?

Do work tasks require flexibility?

Can accomplish tasks independently?

- ***SOCIAL***

Has opportunities for group work/social interaction?

Can it be involved in group activities in which to provide support, help, support, teach?

Can they share own feelings, insights, responsibilities?

Does the work task/learning experience involve ethical, humanistic aims?

Do they have opportunities for communication?

- ***ENTREPRENEUR***

Can assume work role?

Is metacognitive monitoring of learning facilitated?

Is the activity dynamic and competitive?

Are communication skills practiced?

Has the opportunity to practice and develop negotiation skills?

- ***CONVENTIONAL***

Does the activity in which he/she is involved give him/her the opportunity to practice organizational skills?

Is the activity enough structured and organized?

Are data analysis and calculation skills involved in the task?

Has the opportunity to operate on the computer, to apply certain procedures?

Are expectations correctly formulated?

3.5. Benchmarks in setting up the learning situation based on occupational interests

Benchmarks in setting up the learning situation based on occupational interests ensure that educational activities align with students' unique skills, preferences, and career aspirations, fostering engagement and meaningful development.

Table 1.
Benchmarks in setting up the learning situation based on occupational interests

Holland types	Work task/teaching methods	Learning strategies
REALISTIC	-Use of equipment, tools, manual dexterity, digital -Example teaching methods: CAI, Exercise FRISCO method (role given is that of realistic interest) Brainstorming with role exchanges (each student is given a role corresponding to the type of dominant interest (RIASEC)	-underlining main ideas, ideas, formulas; -logical organization of learning material; -use of study tools; maps, tables, graphs; -using tools and objects to be learned; -making graphic links between knowledge; - conducting experiments; -categorizing, reasoning;
INVESTIGATIVE	-Research-type activities in all areas, analyzing, investigating data, hands-on activities with text actively -Example teaching methods: Experiment -Critical treatment of material can be done in writing, individual reflection or group activity, -FRISCO method (the role given is that of researcher, doctor), -Brainstorming with role exchanges (each student is given a role corresponding to the type of dominant interest (RIASEC)	-Rewriting, reorganizing study material; -creating scenarios in your mind for the information read; -conducting experiments; -formulating own ideas on a problem; - debating responsibly and rationally choosing the best solution; -arguing one's own interpretations objectively; - combining intuitive and logical thinking; - formulating several perspectives for analysis and solution; - formulating and evaluating independent opinions; - the courage to promote one's own contributions and accept diversity;
SOCIAL	- Communication -Activities in pairs, groups -Example of teaching methods: Think-Work in pairs-Communicate, -Philips 6-6, -635 method, -FRISCO method (the role given is that of the teacher), -Reciprocal teaching method, -Brainstorming with role exchanges (each pupil is given a role corresponding to the type of dominant interest (RIASEC)	-learn by listening to a conversation or presentation; -learn in groups by asking and answering questions; -explaining the sequence of content to others; -explaining new information, verbal expression of ideas; -discussing the content to be learned in a study group;
ARTISTIC	-Activities involving originality, imagination, artistic expression Examples of teaching methods: -Creative Questioning, -Philips 6-6, -FRISCO method (the role is that of a painter, musician) -635 method, -Brainstorming, - Brainstorming with role exchanges (each pupil is given a role corresponding to the type of dominant interest (RIASEC)	-Using movement, games, dance, dramatization for learning; -creating rhymes, beating the rhythm while learning; -organizing information into structural patterns; -underlining important information with certain colors; -making graphic links between information; -using journals; -using notebooks to express ideas -making creative products;

ENTREPRENEUR	-Initiating and realizing projects -Team working -Communication Example of teaching methods: - Let me have the last word - FRISCO method (the role given is that of entrepreneur, politician) -Brainstorming with role exchanges (each pupil is given a role corresponding to the type of dominant interest (RIASEC)	- having competitions with other pupils; -presenting the material to another person; -periodic reflection on what has been learned; -reading information or writing topics for discussion;
CONVENTIONAL	- Computer operation, application of new procedures, manipulation of objects, Examples of teaching methods: - IAC -Worksheets -SINELG -FRISCO method (the role given is that of a computer scientist) -Brainstorming with role exchanges (each student is given a role corresponding to the type of dominant interest (RIASEC)	-organizing objects and tools in the correct order; -making graphic links between information; -writing summaries containing the main points of the material; -transcribing information; -Practical use of the content learned; -identifying patterns in the information presented; -summarizing

Based on this system of curriculum counseling, unique in Romania and currently being implemented, we believe that the use of Holland's theory of occupational interests in the curricular design of high school teaching activity represents an opportunity to transform the educational process into a more personalized and relevant approach. By linking the types of vocational interests with school activities and content, students can develop specific skills to support their academic and professional trajectories (Nauta, 2010).

4. Conclusions

The integration of Holland's Theory of Vocational Interests (RIASEC) into curricular design presents a transformative approach to education, particularly at the high school level. By aligning educational activities with students' occupational interests, this framework addresses individual learning preferences, enhances engagement, and fosters motivation. Also, the practical application of this approach, as demonstrated in Romanian pilot programs, highlights its potential to create dynamic and inclusive educational environments.

One of the primary achievements of this model is its ability to personalize the learning experience. Through activities tailored to vocational interest profiles, such as Investigative, Realistic, Artistic, or Social, students can better connect with the content, which leads to greater satisfaction, performance, and long-term interest in their academic and career pathways. This personalized approach also bridges the gap between education and the labor market by equipping students with career-specific skills that align with their interests and societal needs. Furthermore, the strategy emphasizes active learning, problem-solving, and collaboration, by encouraging creativity and critical thinking, the framework fostering essential 21st-century skills that prepare students for the complexities of a rapidly changing world. Whether implemented through frontal, group, or individualized activities, the model ensures that all students benefit from learning experiences that resonate with their unique profiles, supporting both academic achievement and personal growth.

The Romanian pilot programs demonstrated that curriculum designed with Holland's theory in mind not only facilitates the acquisition of knowledge but also supports the holistic development of students, but also emphasize it s role in this process, as their creativity and adaptability are central to implementing this differentiated pedagogy. The role of educational counselors is equally significant, particularly in profiling students' interests and guiding their career exploration effort, the integration of RIASEC-based curricular design into education representing a forward-thinking strategy that can transform traditional approaches. It prepares students to navigate modern societal challenges, making them active, competent, and adaptable citizens. This model not only enhances the learning process but also ensures that education remains relevant and meaningful in a diverse and evolving global context.

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You Are Not Alone

Social Gatherings for Children/Adolescents with ADHD to Promote Self-Efficacy and Social Skills

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Abstract

This article addresses the contribution of group social meetings for children with ADHD in promoting self-efficacy and improving social skills. This article is part of my doctoral research and is based on a review of current literature. ADHD is considered one of the most common disorders among students of various ages. Attention has physiological, psychological, and behavioral aspects, significantly impacting overall functioning, particularly in school. Children with ADHD face difficulties in academic performance and social domains, including challenges in social adaptation and forming social connections. Previous studies have indicated that many children diagnosed or characterized as having ADHD struggle significantly in both academic and social areas. We ask them to learn in a way that is unnatural for them, requiring great effort. We value and prioritize behaviors and abilities that do not align with their strengths. One proposed treatment option for children with ADHD is group intervention. group provides a sense of belonging, support, and acceptance, as opportunities to learn diverse behaviors, reflections, and modeling normative behavior. The article reviews previous studies on the impact of therapeutic groups and social meetings on children with ADHD - how these meetings help children improve their social skills and increase their sense of self-efficacy. In conclusion, if we can better understand how these children feel and act, we can create tailored learning environments and positive, adapted educational and social interactions, thereby aiding their personal development.

Keywords:
ADHD, self-efficacy, social group, social skills

1. Introduction

Children with ADHD face more social difficulties than children without the disorder (Barkley, 2006). These difficulties manifest in impaired relationships with both family members and peers. Socially, they often experience greater rejection than students without the disorder. One source of difficulty is the high likelihood of their developing aggressive or oppositional behavior, causing discomfort in their environment. They tend to be impulsive, and hostile, struggle with openness and sharing, have difficulties in cooperation and waiting their turn, tend to express anger when teased, and may even be violent, showing less empathy and guilt (Barkley, 2006; Hinshaw & Melnick, 1995; Hoza et al., 2005).

Consistently, hyperactivity and aggressive behavior combined with inattention and academic difficulties are the main sources of social rejection by peers. Social rejection during childhood and difficulty in forming social relationships predict externalizing and internalizing problems in adolescence, with ADHD sufferers showing more delinquency, smoking, anxiety, and overall impaired functioning compared to their peers (Mrug et al., 2012).

Hence, there is a need for interventions tailored to these children's characteristics, focusing on their executive functioning and improving their social and academic performance in their natural environment and at school. This article presents the social functioning difficulties of children with ADHD and the significance of working in social groups to improve their emotional/social functioning and increase their sense of self-efficacy.

2. Theoretical foundation

2.1. Difficulties of Children with ADHD

ADHD (attention deficit hyperactivity disorder) is defined as a disorder characterized by attention difficulties, impulsive behavior, and hyperactivity, and it is one of the most common neurobehavioral disorders among children (DSM-IV, 2013). Clinical samples show that this disorder's prevalence worldwide is 3%-10% of the population, with the disorder being more common among males (ratio

ranging from 2:1 to 9:1) and only about one-third of those affected receiving treatment.

It is now known that the disorder continues into adulthood, although it may manifest differently in adults than in children and adolescents (Kirsch et al., 2015; Weizman & Manor, 2010). Attention has physiological, psychological, and behavioral aspects, with significant implications for overall functioning particularly at school (Mesulam, 2000).

Adolescence intensifies ADHD symptoms, with puberty acting as an accelerant or distorter of ADHD. Additionally, adolescents with the disorder may develop identity distortions, affecting their choices in adulthood (Naamani, 2012). Children with ADHD have difficulties in test performance and cognitive functioning compared to their peers. A significant percentage of children with ADHD encounter problems in problem-solving and organizational skills, verbal expression, fine and gross motor control, or a combination of these (DuPaul & Stoner, 2010). These difficulties increase their risk of underachievement in studies (Lifshitz et al., 2014).

Several disorders tend to co-occur with ADHD, such as mood disorders, anxiety disorders, obsessive-compulsive disorder, executive dysfunction, and addiction disorders. Pure ADHD is rare in the general population, with most cases showing comorbidities with various academic and behavioral adaptation disorders (Kadesjo & Gillberg, 2001). Currently, ADHD is seen as a chronic medical condition requiring continuous treatment (Barkley, 2019). Accumulating evidence has shown that effective management throughout life can improve the quality of life in those diagnosed (Manor & Tiano, 2012; Young et al., 2013). The central position regarding the most effective treatment model for ADHD is that it should address all aspects of an individual: biological, psychological, and social (Barkley, 2019; NICE, 2020; Wolfson, 2017).

2.2. Social/Emotional Domain among Children with ADHD

Children and adolescents with ADHD suffer from social difficulties. They report having fewer friends and a higher level of social rejection than their peers without ADHD (Barkley, 2003). It has also been found that boys aged 10-12 diagnosed with ADHD have less mature emotional understanding than their peers without ADHD risk. Children with attention disorders are less able to recognize emotions; this is related to their social and behavioral functioning problems (Kats-Gold & Priel, 2009). Most diagnosed with ADHD exhibit a typical range of comorbid clinical disorders characterized by antisocial and oppositional behavior as well as social withdrawal, all of which contribute to the formation of negative and maladaptive relationships between the child and their peers and teachers.

Structured interviews conducted with children with ADHD showed that 15% suffer from severe social impairments, including difficulties in social adaptation and forming social connections. Many tend to suffer greater rejection from peer groups than other children with behavioral disorders (Biederman et al., 2001). It has also been found that children with ADHD have difficulty creating and maintaining relationships with peers (Mrug et al., 2001). They tend to be argumentative, domineering, aggressive, and disruptive, which may contribute to social rejection and isolation.

The impulsivity of children with ADHD may affect their ability to accurately process relevant social cues and information, leading to a tendency to perceive neutral or ambiguous social interactions as negative or hostile (Warner-Rogers, 2005). The explanation for rejection and neglect phenomena is likely related to findings indicating that ADHD leads to a lack of understanding of social cues and situations, causing children with ADHD to be unaware of the negative impact of their behavior on others, thereby impairing their ability to learn social skills through observation of their peers (Gentschel & Mclaughlin, 2000; Hoza, 2007). Students have expressed their main concern about the impact of ADHD on their relationships with others. Thus, researchers have concluded that interventions teaching social skills might improve the quality of life for students and reduce ADHD symptoms (Arbesman et al., 2013).

2.3. Self-Efficacy among Children and Adolescents with ADHD

Self-efficacy refers to an individual's perception of their ability to perform tasks and assignments (Bandura et al., 2003). Perceptions of self-efficacy influence decision-making, emotional responses, effort, coping, and persistence, and it can change through learning, experiences, and feedback from the environment. Perceptions of self-efficacy include three main components:

1. Social self-efficacy - how an individual handles social challenges.
2. Academic self-efficacy - an individual's perceived control over academic content.

3. Emotional self-efficacy - emotional regulation and stress management (Muris, 2001).

People with high self-efficacy tend to accept challenges, show motivation, persist in tasks, and achieve goals more than those with low self-efficacy. The more individuals believe they control a situation, the more successful their performance will be (Bandura, 1997). Research findings have shown that children and adolescents with ADHD have lower self-efficacy than those without ADHD (Jhambh et al., 2014). The research literature provides extensive evidence of the high prevalence of executive function impairments among children with ADHD, due to neurological deficits in the prefrontal networks of the brain (Katz & Toglia, 2018).

Barkley (2015) defined executive functions as a high-level cognitive set of control and regulatory functions in the brain that contribute to behavior-directed regulation. These biological mechanisms are intended to control and regulate behavior, emotion, and cognition, allowing the performance of complex actions efficiently to achieve goals. Research has indicated that these significant impairments prevent many individuals with ADHD from achieving age-appropriate tasks, leading to frustration and constant damage to their sense of self-efficacy (Katz & Toglia, 2018). Additionally, research has shown that executive function impairments also affect awareness of self-management ability, reducing behavioral performance successes among individuals with ADHD (ibid).

Moreover, contemporary society holds negative attitudes towards ADHD and those diagnosed with it. Children with ADHD often experience social rejection from classmates and even teachers. Recent research has shown that teachers negatively assess the academic levels of children with ADHD, regardless of their actual achievements, and treat them differently from their peers without this diagnosis (Lebowitz, 2016). Qualitative studies examining the emotional experience of adolescents with ADHD have found that those diagnosed often feel they are in a continuous cycle of increased environmental pressure around managing daily tasks. This combination of biological difficulties, dealing with social rejection, and experiencing ongoing pressure forms a solid basis for high emotional arousal, leading to low self-efficacy among adolescents with ADHD (Corcoran et al., 2017).

2.4. Social-emotional skills

Social-emotional learning (SEL) is a multifaceted developmental term based on social understanding, information processing, and pragmatic social skills (Mckown, 2015). Social-emotional skills are measured by interacting with people over time, maintaining positive relationships, and behaving appropriately in social situations (Becker, 2009). Each social skill has two aspects: cognitive understanding and application. Cognitive understanding involves understanding a skill when it is needed, and how it manifests (Mckown, 2017). Application is the ability to perform a skill in practice according to a situation, with the practical aspect encompassing self-control skills (Frydenberg et al., 2017).

Children with ADHD have impaired executive functions related to self-organization, goal-directed action, and emotional regulation, causing difficulties in moderating or controlling emotional responses and affecting children and their entire families. Thus, emotional difficulties manifest in less emotional self-regulation, excessive emotional expression, difficulty coping with frustration, and reduced empathy (Barkley, 2006).

2.5. Contribution of Group Meetings for Children with ADHD

Group thinking began its scientific development with the emergence of sociology. Social scientists defined groups in various ways. Yalom (2006) argued that the power of groups lies in resonance, reflection, and the ability to share. Resonance occurs when one story meets another and one emotion meets others, creating a collective melody through a dialogue between subconscious worlds (Yalom, 2006). Greenbaum argued that groups are mirrors that provide feedback, hugs, and support to others and oneself in the mirror. They evoke attachment, reinforce patterns, roles, internal and external representations, and even subconsciously repair family experiences. According to him, groups can be developmental and empowering or destructive and traumatic such as family (Greenbaum, 2016).

Group structures can be described in terms of social attitudes, roles associated with these attitudes, and connections between them. When people interact in a group, each seeks to elicit satisfying responses from others. If group membership is stable, interactions gradually form patterns where each member is expected to fill a fixed role. Groups can be said to consist of several forces pulling in potentially opposite directions: they have work and tasks to

perform, but they must also maintain cohesion and an optimal level of morale. Every group includes tensions that intensify over time between its collective goals and members' motives (Yerushalmi, 2000). Sternberg and Metlman (2014) showed that group therapeutic work with children suffering from ADHD, learning disabilities, and sensory regulation issues has special potential to help restore self-esteem, damaged in part due to social aspects of their lives (Sternberg-Zamir & Metlman, 2014). Group members have desires such as closeness to others, and being cared for and loved. Additionally, the need for belonging is a strong motivator in groups. Meeting these needs can correct previously troubled relationships often characterizing children with learning difficulties (Yalom, 2006).

Despite the scarcity of group models specifically targeting these children and limited research support for their effectiveness, some believe that group activity is one of the most effective ways of preventing undesirable behaviors in children and adolescents (Shechtman, 2002). The effectiveness of group meetings is attributed to the group providing a sense of belonging, support, acceptance, learning a range of behaviors, feedback and reflection, satisfaction, growth, and modeling normative behavior (Yalom & Leszcz, 2021).

Group intervention for children with ADHD offers a context closer to real-life relationships with peers. The therapeutic setting invites situations that allow guidance in interactions with peers and, more importantly, provide children with a space, where they can help one another acquire and generalize skills (Webb & Myrick, 2003). It has also been found that small group interventions with adults are significant for children, as they support relationships and allow participants to learn how to be part of a group. This type of intervention enables children to express their strengths within a group setting and experience empowering interactions. The main goal of therapeutic groups is to generalize change in a child's natural social environment (Frankel & Feinberg, 2002).

Small group work focuses on imparting social skills by adopting principles from existing treatment methods and adapting them for treating children with ADHD. The goal of group treatment is to improve children's social ability and adaptability by eliminating destructive behaviors characteristic of these children and enhancing constructive behaviors. Group therapists' role is to identify children's difficulties in real-time, reflect, maintain, and initiate intra- and interpersonal intervention processes, and address social situations with therapeutic responses (Plotnik, 2014). Their presence allows them to analyze relationships between individual behavior and environmental responses, and respond "here and now," promoting replacement of maladaptive behavior with adaptive behavior. Attention to children's feelings in social situations enables more accurate interpretation and prevents leaving them with a difficult experience of "everyone is against me." Thus, therapists function as a significant self-other for a child (Biederman, 2007; Lavoie, 2006).

3. Discussions

Children with social difficulties often lack knowledge of and experience with social norms promoting friendships. Understanding social rules is like having a map to navigate a complex environment for them. Once they decipher social codes children feel they can navigate more safely in the social domain. Work on social codes is done in peer groups through a cognitive understanding of social rules, simulations in a group, and peer discussions. Combined work of interpretation and application effectively promotes social-emotional skills (Frydenberg et al., 2017). Therefore, alongside medication treatment, it is recommended to address the psychological component.

The psychological component focuses on solving social problems, improving social interactions, and self-control skills, and interpreting social situations (Shalev-Meborach & Sitbon-Farhi, 2011). Parents provide the psychological component at young ages (Manor & Tiano, 2012). Findings have indicated that variables such as parent-child relationship, family stability, and family social support influence the empowerment or reduction of existing disorder symptoms (Barkley, 2019).

The social component of treatment will focus on children’s educational framework. Positive relationships between an educational figure and a child with ADHD can significantly improve the child's social and academic performance in the short term and enhance chances of success in the long term (Manor & Tiano, 2012).

6. Conclusions

To conclude, the meeting of children with ADHD in a group serves as a kind of "gym" for developing social skills. In a group, children can practice how to take their place in a group and handle social challenges through practice and training in a social space. In a group, children "train" in social skills by developing

friendships within the group with the mediation and guidance of an adult. Groups allow an accompanying adult to identify social difficulties and their sources directly through children's natural interactions with others. This way, it is possible to help children correct social failures on the spot and help them create positive social interactions during a meeting. A group meeting is essentially learning through experience, and therefore emotional and behavioral change is embedded outside the peer group because children have practiced and refined their skills in reality situations.

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