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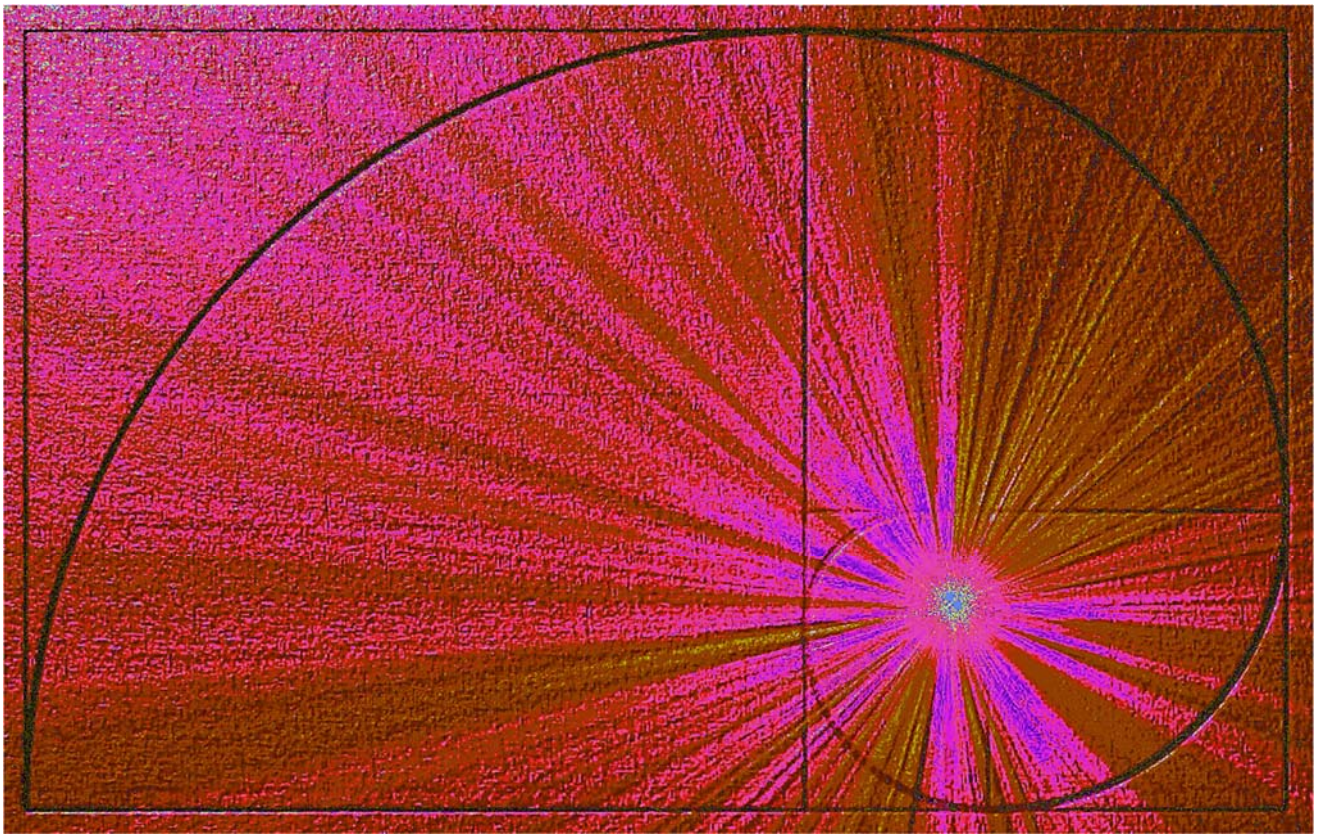

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Purpose – Philosophy - Access

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Contents

EDITORIAL

The 4th issue of the International Journal of Educational Innovation (I.J.E.I.) of the Scientific Union for the Promotion of Educational Innovation (EEPEK), within 2025 is available, thus, reflecting primarily the great interest in it by the educational community. Particular reference is made to the colleagues-members of the reviewing committee of this journal - for their outstanding work and ongoing effort to establish this journal as a valid means of knowledge contribution to the educational communities of all levels. Colleagues' response to the journal's invitation to participate in the journal processes, as members of the scientific and editorial committee or as authors of research papers, was particularly great and provided the educational community with another form of constructive interaction other than that of conferences, training seminars and other actions implemented. In this way, we come one step closer to our central strategic aim: the creation of a large Learning Community, which will include all teachers, at all levels of education.

Therefore, once more, this issue presents a variety of topics related to education, and educational practices. The aim of every teacher is to find the best way possible to achieve the goals set in any subject taught and/or target group/s addressed. These goals include conveying knowledge, enhancing the cultivation of attitudes and values, such as self-confidence, self-esteem, or empathy, and the cultivation of skills such as interaction, communication or the ability to learn how to learn. However, the main objective of education is to help students meet challenges throughout their lives. Thus, this issue presents innovative suggestions, tools and techniques related to teaching and learning, as well as issues related to education and educational innovation, thereby highlighting both the need for research in education and the need for education to apply research results to practice. In order for teachers to achieve these goals and objectives, the importance of sharing good practices and knowledge are principal. Our goal then is to disseminate teachers' suggestions and ideas as well as their research findings.

We hope that this issue will help all those, educators and non-educators, who dream of effective education through innovation to provide ideas for a better future for all students. We will keep on with the same passion …

Dr. Charilaos Tsichouridis, Chief Editor, University of Patras
Dr. Dimitrios Kolokotronis, EEPEK President, Publishing Director

Reconceptualising Practicum Supervision in Initial Teacher Education: Empirical Insights from Pre-Service Teachers

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Abstract

This study explores pre-service early childhood teachers' perceptions of supervision during the teaching practicum, focusing on the roles, practices, and organizational conditions that contribute to practical support in initial teacher education. Using a mixed-methods design, quantitative data from questionnaires (N = 221) and qualitative data from open-ended responses were analyzed to examine students' views on supervision, feedback, communication, and areas for improvement. Findings indicate that supervision is primarily perceived as a process of pedagogical guidance, advisory support, and structured feedback. At the same time, relational elements associated with mentoring are valued as complementary rather than dominant. Students emphasized the importance of supervisors' teaching experience, small-group, face-to-face feedback, frequent communication, and manageable supervisor–student ratios. The study concludes that a hybrid supervision model—supervision-led and mentoring-informed—offers a pedagogically sound and innovative framework for enhancing the quality of the teaching practicum in initial teacher education.

Keywords: teaching practicum, supervision, initial teacher education, mentoring, early childhood teachers

Introduction

The practicum is a central component of initial teacher education, as it enables pre-service teachers to participate in authentic educational contexts and gradually develop professional competencies and identity (Darling-Hammond, 2017). International research has consistently shown that the effectiveness of the practicum does not depend solely on its duration or formal structure, but primarily on the quality of the pedagogical support accompanying it, particularly in how supervision roles, responsibilities, and feedback processes are organized (Clarke et al., 2014).

Within this context, both supervision and mentoring have been highlighted in the literature as key mechanisms for supporting student teachers during the practicum. High-quality support relationships have been associated with enhanced engagement, professional confidence, and psychological safety among pre-service teachers (Ambrosetti, 2014; Hudson, 2016). At the same time, the need for systematic feedback and organizational coherence positions supervision as the dominant institutional framework in many initial teacher education programs, with mentoring often functioning as a complementary or integrated component within hybrid models of support (Glickman et al., 2024; Hattie & Timperley, 2007). Recent developments, particularly following the expansion of digital and hybrid forms of observation and feedback, further indicate that supervision models are evolving in response to changing educational conditions while retaining their structural role (Agnew et al., 2024).

Despite the growing body of international research, less attention has been paid to pre-service teachers' perspectives, especially regarding how they conceptualize the role, practices, and effectiveness of supervision during the practicum. This gap is particularly evident in early childhood education, where specific pedagogical and contextual factors shape practicum experiences.

The present study seeks to address this gap by examining students' perceptions, expectations, and proposals regarding supervision during their practicum. By foregrounding student teachers' voices, the study aims to contribute empirical evidence to the ongoing discussion on effective and innovative supervision models in initial teacher education.

Purpose of the Study and Research Questions

The purpose of the present study is to explore pre-service teachers' perceptions of supervision in practicum and to identify the characteristics of an effective supervision model in initial teacher education. Specifically, the study addresses the following research questions:

1. How do pre-service teachers in Early Childhood Education departments perceive the role and significance of supervision during the practicum?
2. Which characteristics, forms of collaboration, and supervisory practices do pre-service teachers consider essential for an effective supervision model in initial teacher education?
3. What improvements do pre-service teachers propose to enhance the quality and effectiveness of practicum supervision?

Theoretical Framework

Supervision in the Practicum: From Clinical Supervision to Learning-Oriented Support

Supervision in the practicum is commonly defined as a systematic pedagogical process that guides, supports, and provides feedback to pre-service teachers during their professional training (Glickman et al., 2024). Traditionally, supervision was closely associated with models of clinical supervision that focused on structured classroom observation and feedback to improve teaching performance. While such models contributed to the professionalization of teaching practice, they have been criticized for their predominantly evaluative and technocratic orientation.

Contemporary literature increasingly conceptualizes supervision as a learning-oriented process that extends beyond monitoring and assessment, emphasizing professional learning, collaboration, and the development of pedagogical judgment (Clarke et al., 2014; Darling-Hammond, 2017). Within this perspective, supervision is understood as a mediating mechanism that supports the integration of theory and practice and facilitates the gradual construction of professional knowledge.

Reflective Practice and Supervision

Reflective practice constitutes a central theoretical foundation of contemporary models of supervision. Drawing on the work of Schön (1983, 1987), reflection is viewed as a process through which professionals examine their actions both during practice (reflection-in-action) and after practice (reflection-on-action), thereby reconstructing their professional understanding.

In initial teacher education, reflective practice is not considered an automatic competence but rather a process that requires systematic pedagogical support (Boud et al., 1985). Supervision provides a structured context for dialogue, critical inquiry, and guided reflection, enabling pre-service teachers to analyze their pedagogical choices, link theoretical concepts with practical experiences, and develop metacognitive awareness and professional judgment (Boud et al., 1985; Jay & Johnson, 2002; Miller, 2023).

Mentoring, Supervision, and Hybrid Models of Support

Alongside reflective supervision, mentoring has been widely discussed in the literature as a relational form of support characterized by trust, encouragement, and professional guidance. In practicum contexts, mentoring contributes to the emotional and social dimensions of learning and supports pre-service teachers' professional identity development (Ambrosetti, 2014; Hudson, 2016).

However, research has also identified structural and organizational limitations that constrain the effectiveness of mentoring when implemented as a standalone model in initial teacher education, including role ambiguity, uneven mentor preparation, time constraints, and tensions between support and assessment, which may undermine trust and learning within mentoring relationships (Clarke et al., 2014; Hobson et al., 2009). As a result, recent studies increasingly advocate for hybrid or integrative models in which supervision provides the organizational and pedagogical structure. At the same time, mentoring elements enrich the process by fostering supportive relationships and psychological safety.

The Greek Context of Practicum Supervision in Early Childhood Education

In the Greek context, the practicum in Early Childhood Education departments is recognized as a critical component of initial teacher education and a key mechanism for linking theoretical knowledge with educational practice. Greek research highlights the importance of systematic supervision and pedagogical support in fostering reflective practice, professional learning, and the gradual development of professional identity among pre-service teachers (Avgitidou, 2014; Avgitidou & Gourgiótou, 2016; Chrysafidis, 2013).

Furthermore, the work of the Greek Network of Practicum Programs in Early Childhood Education Departments (To Diktyo) has played a significant role in promoting collaborative and reflective supervision models and in emphasising the importance of student teachers' active participation and voice in the evaluation and improvement of practicum practices (Androusou & Tsafos, 2013; Gourgiótou et al., 2020; Sfyroera et al., 2020). Nevertheless, despite extensive theoretical and research-based literature, the systematic documentation and analysis of pre-service teachers' perceptions and expectations regarding the role, practices, and effectiveness of supervision remain limited, particularly in early childhood education. Greek research has tended to focus either on specific dimensions of support, such as the mentoring relationship, or on more general student attitudes towards the practicum, rather than on supervision as a comprehensive pedagogical process (Kyridis, 2023; Papaioannou, 2025).

Based on this theoretical framework, the present study adopts a research design that integrates quantitative and qualitative data collected through a questionnaire to capture both patterns and trends in pre-service teachers' perceptions and expectations, as well as the meanings they attribute to their supervision experiences and to their proposals for improvement. The following section outlines the data collection procedure, the sample, the research instrument, and the analytical methods employed.

Methodology

Research Design

The present study adopted a mixed-methods research design, combining quantitative and qualitative data to achieve a comprehensive understanding of pre-service teachers' perceptions and experiences of practicum supervision. The choice of a mixed-methods approach was considered appropriate, as it allows for the identification of general trends and patterns through quantitative analysis, while also enabling an in-depth exploration of meanings and experiences through qualitative data (Creswell & Plano Clark, 2017).

The research design was descriptive and exploratory, as it sought to document pre-service teachers' perceptions, expectations, and proposals without implementing an experimental intervention or controlling for variables.

Participants

The sample consisted of N=221 pre-service teachers (N/n refers to the number of participants) enrolled in Early Childhood Education departments in Greece, representing all years of study.

A non-probability convenience sampling strategy was employed, as access to participants was facilitated through academic structures associated with the practicum. This sampling approach is commonly considered appropriate for exploratory studies in educational research, where the primary aim is to capture the perspectives of specific reference populations rather than to achieve statistical generalization.

Data were collected through an online questionnaire distributed voluntarily to students. The electronic format of the research tool facilitated participation from students across different years of study and geographical regions and ensured the anonymous recording of responses.

Research tool

Data were collected using a structured questionnaire comprising both closed-ended and open-ended questions. The questionnaire was designed around thematic axes directly aligned with the study's research questions and informed by the theoretical framework of practicum supervision as articulated in the international literature.

The closed-ended questions included Likert-type, multiple-choice, and ranking items, enabling quantitative measurement of attitudes and preferences. The open-ended questions aimed to elicit participants' experiences, reflections, and proposals in their own words, thereby enhancing the depth and interpretive dimension of the study (Braun & Clarke, 2006).

Data Collection Procedure

Data collection took place within a defined time period, during which participants were clearly informed of the study's purpose and the voluntary nature of their participation. Completion of the questionnaire was considered to constitute informed consent.

Participants' anonymity and confidentiality were fully ensured, as no personal data that could lead to their identification was collected. All data were used exclusively for research purposes, in accordance with the fundamental principles of research ethics in the social sciences (Cohen et al., 2018).

Data Analysis

The dataset comprised both quantitative and qualitative data, which were analyzed using corresponding methodological approaches.

Quantitative data were analyzed using descriptive statistics to calculate frequencies, percentages, means, and standard deviations, thereby identifying general trends in participants' responses related to the research questions.

Qualitative data derived from the open-ended questions were analyzed using thematic analysis. The analysis followed the six-phase framework proposed by Braun and Clarke (2006): familiarization with the data, initial coding, theme identification, theme review, and theme definition and naming. Through this process, key thematic categories emerged, capturing how pre-service teachers conceptualize practicum supervision and articulate proposals for its improvement.

To enhance transparency and credibility in the qualitative analysis, findings were illustrated with representative verbatim excerpts, attributed using participant codes (e.g., P12, P37), ensuring that no identifying information could be linked to individual respondents.

Results

Sample characteristics

A total of N = 221 responses were analyzed. The sample consisted predominantly of women (97.3%**,** n = 215), while men accounted for 2.7% (n = 6). Information on the semester of study was available for 217 participants. The most considerable proportions of respondents were enrolled in the 8th semester (n = 71) and the 2nd and 4th semesters (n = 59, n = 52) (Table 1).

Table 1. Sample characteristics (N = 221)

Variable	Category	n	%
Semester (valid n=217)	1st	3	1.4
	2nd	59	27.2
	3rd	3	1.4
	4th	52	24.0
	6th	23	10.6
	7th	2	0.9
	8th	71	32.7
	10th	4	1.8

Pre-service Teachers' Perceptions of the Role and Significance of Supervision in the Practicum

Regarding perceptions of the supervisory role, participants most frequently identified advisory support (n = 161, 72.9%) and pedagogical guidance (n = 141, 63.8%) as core functions of supervision. Dimensions related to material or other forms of support (n = 83, 37.6%) and emotional/psychological support (n = 76, 34.4%) were also considered important, though less central.

Qualitative data corroborated this pattern. Analysis of responses to the open-ended question on the importance of supervision revealed that the supervisor's role was primarily conceptualized as guidance and counselling, with an emphasis on supporting students throughout the practicum. Participants referred to the supervisor as someone who "guides the student appropriately" (P9) and "advises students and suggests solutions to possible problems" (P16).

Feedback and improvement also emerged as a salient theme, with supervision described as important "for the practicum as well as for feedback" (P47) and for the "correction of mistakes" (P93).

In addition, several responses linked the significance of supervision to the provision of emotional safety and support. Participants noted that they "feel a sense of security when under the supervision of a supervisor" (P13) and highlighted the importance of psychological and counselling support (P59). Finally, supervision was also described as a mechanism for linking theory to practice, with students stating that the supervisor "helps theoretical knowledge to be put into practice" (P22).

Characteristics, Forms of Collaboration, and Supervisory Practices of an Effective Supervision Model

Regarding supervisor characteristics, the highest mean importance rating was given to teaching experience in early childhood education. This was followed by relevance to the subject of study and scientific/academic training. Specialization in a specific subject area received a comparatively lower mean score (Table 2).

Table 2. Importance of supervisor characteristics (1–5 scale)

Characteristic	Valid n	M	SD
Teaching experience in preschool education	217	4.27	0.98
Relevance to the subject of study	169	4.09	0.89
Scientific/academic training	210	4.02	1.03
Specialization in a specific subject area	169	3.68	1.01

In terms of collaboration and communication, participants most frequently preferred scheduled appointments (n = 162, 73.3%) and e-mail communication (n = 140, 63.3%), while telephone communication was mentioned less often (n = 63, 28.5%). Regarding communication frequency, nearly half of the participants (n = 103, 46.6%) preferred once-weekly communication, whereas a substantial proportion (n = 57, 25.8%) preferred communication two to three times per week.

Concerning feedback formats, in-person small-group workshops were rated as the most effective setting (M = 4.29, SD = 0.79), compared with in-person plenary lectures (M = 3.68, SD = 0.97) and online/distance feedback (M = 3.51, SD = 0.96)

The supervisory roles most frequently expected during collaboration were advisory guidance (n = 178, 80.5%), followed by pedagogical guidance (n = 148, 67.0%), and feedback on implementation/teaching (n = 144, 65.2%) (Table 3).

Table 3. Expected supervisory roles (multiple responses allowed; N = 221)

Expected role	n	%
Advisory support	178	80.5
Pedagogical guidance	148	67.0
Feedback on implementation/teaching	144	65.2
Feedback on lesson plans/designs	131	59.3
Suggestions for teaching activities	118	53.4
Emotional/psychological support	90	40.7
Provision of teaching materials	81	36.7

Regarding the timing of the initiation of collaboration with the supervisor, responses were distributed almost evenly among an early start (semesters 1–4, n = 62), a mid-program start (semesters 5–6, n = 64), and a later start (semesters 7–8, n = 68). Qualitative rationales aligned with these groupings and were associated with the need for early familiarization and preparation, the acquisition of sufficient theoretical background and maturity, or the accumulation of experience prior to supervised practice.

At the organizational level, most participants expected the supervisor to have reviewed the submitted lesson plan/design (n = 188, 85.1%) and to be prepared to offer alternative suggestions for instructional planning (n = 157, 71.0%).

In addition, the ideal supervisor–student ratio was most commonly identified as 1:10 (79.2%).

Pre-service Teachers' Proposals for Improving Supervision

A total of 139 interpretable open-ended responses were coded. Analysis of students' proposals for improvement revealed several recurring themes. The most frequently mentioned suggestion concerned improving communication and supervisor availability, with participants calling for "more frequent communication" (P10) and "proper contact with students" (P9).

Participants also emphasized the need for a supportive interpersonal stance, highlighting "understanding", "politeness", and "patience" on the part of the supervisor (P15, P8). Particular emphasis was placed on the nature of feedback, with students requesting non-judgmental and supportive feedback. They noted that supervisors should "help without being critical" (P171) and "not condemn mistakes" (P18).

Furthermore, participants proposed strengthening in-person small-group meetings or workshops to allow more time for discussion and individualized support (P81, P88). Less frequently mentioned but still noteworthy were suggestions to provide teaching materials or

practical ideas (P48, P130) and to reduce the number of students per supervisor to enhance supervision effectiveness (P47, P115) (Table 4).

Table 4. Improvement suggestion clusters (coded; n = respondents mentioning the theme; non-exclusive; n=139)

Theme	n
More frequent/stable communication & availability	33
Supportive stance (understanding/politeness/patience)	20
Non-judgmental (not critical/derogatory) feedback	13
In-person small-group meetings/workshops	16
Provision of ideas/material/practical examples	8
Reduced load / smaller groups (ratio)	7

Discussion and Conclusions

The present study examined the perceptions, expectations, and proposals of students enrolled in the Pedagogical Departments of Early Childhood Education in Greece regarding practicum supervision to identify the parameters of a practical, pedagogically grounded support model in initial teacher education. The findings are discussed in relation to the international literature and lead to a synthetic interpretation of the predominance of supervision, as well as to the articulation of a hybrid supervision model incorporating mentoring elements. These findings resonate with broader international analyses showing that, despite ongoing reform efforts, practicum supervision remains marked by enduring challenges in coherence and role alignment (Heinz, 2024).

Regarding the role and significance of supervision, pre-service teachers primarily conceptualized the supervisor as an advisor and pedagogical guide, with meaningful feedback as a core function. This perception aligns with international literature that conceptualizes practicum supervision as a structured pedagogical process rather than a mechanism of control or evaluation (Glickman et al., 2024). At the same time, the emphasis on advisory and guiding functions confirms that pre-service teachers, particularly in the early stages of their professional development, expect support that helps them organize their teaching experiences and transform theoretical knowledge into practical action (Darling-Hammond, 2017). This conceptualization resonates with contemporary perspectives that frame the supervisor's role as facilitative and dialogical, emphasizing coaching-oriented interactions that support professional learning rather than directive control (Lofthouse, 2019).

The frequent reference to feedback as a central function of supervision reinforces the view that feedback constitutes a critical mechanism for professional learning, especially when it is structured and systematically organized (Asregid, 2025), targeted, dialogic, and oriented towards improving practice (Hattie & Timperley, 2007). Empirical evidence further suggests that feedback and mentoring practices contribute most effectively to professional learning when embedded within structured, reflective supervisory frameworks rather than operating as isolated or informal forms of support (Kalsoom et al., 2019). The qualitative findings indicate that students do not perceive feedback as fragmented or incidental commentary, but rather as a process closely linked to feelings of safety, encouragement, and professional empowerment. This dimension is consistent with recent research highlighting the role of support and "high-quality relationships" in fostering psychological safety and engagement during the practicum (Dreer-Goethe, 2025). Moreover, supervised practicum experiences have been shown to play a critical role in the formation of pre-service teachers' professional identity, particularly when reflective dialogue and feedback are systematically integrated into supervisory practices (Toh et al., 2022).

Regarding the characteristics and practices of an effective supervision model, the findings reveal a clear preference for teaching experience in early childhood education and relevance to the field over narrow scientific specialization. This trend suggests that pre-service teachers place particular value on the supervisor's applied credibility and ability to understand the realities of classroom practice. This finding is consistent with international studies indicating that practical practicum guidance requires familiarity with the school context and the capacity to connect theory with everyday instructional decision-making (Clarke et al., 2014).

Particular significance is attached to the predominance of in-person small-group workshops as the preferred context for feedback. This preference supports the view that reflective and critical processes are facilitated in small, dialogic settings, where students can discuss concrete examples from their practice and receive individualized guidance. Recent studies examining mentoring and supervisory dialogue through collaborative observational tools highlight that mentoring and supervision conversations become more meaningful when structured around shared language, discussion protocols, and observational evidence—features that align closely with workshop-based, small-group formats (Goldshaft, 2024; Hunskaar et al., 2025). Although digital forms of support are recognized as applicable, they appear to function primarily as complementary rather than as substitutes for direct pedagogical interaction. This finding is consistent with recent research on hybrid supervision models, which indicates that, despite technological affordances, embodied, face-to-face communication remains critical to the quality of feedback (Agnew et al., 2024).

Students' expectations for weekly (or more frequent) communication, adequate supervisor preparation, and a low supervisor–student ratio (1:10) underscore the importance of the organizational conditions of supervision and converge with the conception of supervision as a systematic process (Glickman et al., 2024). Recent research further indicates that the quality of supervision is strongly shaped—and often constrained—by structural conditions such as workload, time pressure, and institutional demands, highlighting the need for clearly structured and sustainable supervisory arrangements (Bjørndal et al., 2024). These findings also illuminate practical constraints identified in the international literature regarding the implementation of mentoring as an exclusive support model, including time limitations, increased workload, role ambiguity, resource constraints, and the often unrecognized, "hidden labour" of mentors and practicum supporters (Byth, 2024; Letloenyane et al., 2025). From this perspective, students' preference for structured supervisory practices can be interpreted as a search for stability, consistency, and pedagogical clarity.

The nearly even distribution of responses regarding the appropriate timing for initiating collaboration with a supervisor (early, mid-program, or later stages) reflects different pedagogical rationales: (i) the need for early familiarization and a sense of safety, (ii) the need for a solid theoretical foundation and maturity, and (iii) the need for accumulated experience and readiness. This differentiation aligns with international findings suggesting that pre-service teachers experience the practicum as a dynamic learning context shaped by personal and situational factors and that they develop in non-linear ways (Li et al., 2023).

The students' improvement proposals form a coherent framework that does not reject mentoring but instead integrates it functionally into a hybrid model. Specifically, students call for structural features of supervision (stable communication, preparation, small-group work, and clearly defined roles), alongside qualitative mentoring elements (supportive and non-judgmental attitudes, encouragement, and psychological safety). This finding reinforces the theoretical position that, in initial teacher education, supervision constitutes the necessary organizational core, while mentoring functions complementarily by enriching the process with relational and emotional dimensions (Ambrosetti, 2014; Byth, 2024; Letloenyane et al., 2025).

Overall, the study concludes that the predominance of supervision in initial teacher education is not merely an institutional choice but a pedagogical necessity aligned with pre-service teachers' developmental stage. At the same time, the findings suggest that the most

effective supervision models are those that selectively integrate mentoring elements, forming an innovative hybrid approach that emphasizes structured feedback, small-scale interactions, and supportive relationships. The contribution of the present study lies in foregrounding pre-service teachers' voices as a key factor in the design and improvement of supervision, offering empirical evidence that can inform the enhancement of practicum practices and support pedagogical innovation in initial teacher education.

Implications for Educational Innovation

The findings of the present study highlight critical implications for the pedagogical and organizational redesign of the practicum in the initial preparation of early childhood educators. In this context, educational innovation is not understood as the introduction of fragmented technological interventions, but rather as the reconfiguration of the core of supervisory practice based on empirically grounded student needs.

First, the results support a shift from formal or predominantly evaluative supervision towards a structured, reflective supervision model in which feedback functions as a central mechanism for professional learning. Practices such as iterative feedback cycles, the use of reflective tools, and small-group workshop-based supervision are innovative approaches that reposition the practicum from a site of instructional compliance to a context for learning and professional development.

Second, the findings call for a redefinition of the supervisory role, framed less as control and more as a pedagogical coordinator and facilitator of learning. The emphasis on teaching experience in early childhood education and its relevance to the field suggests a pedagogical innovation that transforms traditional guidance relationships and reshapes learning dynamics within the practicum.

Third, the strong preference for small-group, face-to-face workshop supervision indicates the need for organizational innovations that enhance individualized feedback, reflective engagement, and students' psychological safety. Small-scale supervision emerges as a critical condition of quality, particularly in contexts where support is often provided through large-scale or fragmented arrangements.

Finally, the study provides empirical support for the value of a hybrid supervision model that maintains structure, consistency, and accountability. At the same time, mentoring is functionally integrated to contribute non-judgmental attitudes, encouragement, and emotional support. This approach represents a realistic, pedagogically grounded innovation in initial teacher education, as it responds to both pre-service teachers' learning needs and the organizational constraints of practicum programs.

Overall, foregrounding pre-service teachers' voices in the design and evaluation of supervision constitutes an important dimension of educational innovation. By strengthening participation and shared responsibility, such an approach can improve program quality and develop more flexible and effective models of initial teacher education.

Limitations and Future Research

Despite the contribution of the present study to understanding supervision in the teaching practicum from the perspective of pre-service early childhood educators, several limitations should be acknowledged. First, the data were collected through self-reported questionnaires, which may be subject to social desirability bias and reflect participants' subjective perceptions rather than observed practices. Second, the sample consisted exclusively of students from early childhood education departments, limiting the generalizability of the findings to other teacher education contexts or subject areas. In addition, the cross-sectional design captured perceptions at a single point in time and did not allow for examination of how students' views on supervision may evolve across different stages of their studies or practicum experiences.

Future research could address these limitations by employing longitudinal and mixed-methods designs that follow pre-service teachers across multiple practicum placements,

enabling a deeper exploration of changes in perceptions, needs, and professional learning over time. Further studies could also incorporate the perspectives of supervisors, mentor teachers, and university staff in order to triangulate findings and provide a more comprehensive understanding of supervisory practices. Finally, experimental or design-based research approaches could examine the implementation and impact of structured or hybrid supervision models—combining elements of supervision and mentoring—on student teachers' professional development, thereby contributing empirical evidence to support innovative and sustainable practices in initial teacher education.

References

Agnew, A., Kearney, M., Ó Grádaigh, S., Mac Mahon, B., & Connolly, C. (2024). Exploring a synchronous hybrid observation approach for supporting student teachers during school placements. *Education Sciences, 14*(9), 991. https://doi.org/10.3390/educsci14090991

Ambrosetti, A. (2014). Are you ready to be a mentor? Preparing teachers for mentoring pre-service teachers. *Australian Journal of Teacher Education, 39*(6), 30–42. https://doi.org/10.14221/ajte.2014v39n6.2

Androusou, A., & Tsafos, V. (2013). *Educating teachers as mentors of future teachers within an inquiry-based reflective framework* [Εκπαιδεύοντας εκπαιδευτικούς ως μέντορες μελλοντικών εκπαιδευτικών σε ένα διερευνητικό αναστοχαστικό πλαίσιο]. In A. Androusou & S. Avgitidou (Eds.), *The teaching practicum in initial teacher education: Research approaches* (pp. 361–396). Network of Teaching Practicum, National and Kapodistrian University of Athens. [In Greek]

Asregid, D. (2025). Practicum supervisors' structured feedback and pre-service teachers' engagement in reflective practice. *Reflective Practice*, 1–11. https://doi.org/10.1080/14623943.2025.2607126

Avgitidou, S. (2014). *Educating future teachers: Factors shaping pre-service teachers' learning experiences during the practicum* [Εκπαιδεύοντας τους μελλοντικούς εκπαιδευτικούς: Παράγοντες που διαφοροποιούν τη μαθησιακή εμπειρία των υποψηφίων εκπαιδευτικών κατά την πρακτική άσκηση]. *Research in Education, 1*(2), 65–85. https://doi.org/10.12681/hjre.8938 [In Greek]

Avgitidou, S., & Gourgiótou, E. (2016). *The teacher as a reflective practitioner* [Ο εκπαιδευτικός ως στοχαζόμενος επαγγελματίας]. In S. Avgítidou, M. Tzekaki, & V. Tsafos (Eds.), *Pre-service teachers observe, intervene, and reflect: Supporting the teaching practicum* (Vol. 1, Chap. 1, pp. 9–92). Gutenberg. [In Greek]

Bjørndal, C., Mathisen, P., Wennergren, A.-C., & Thornberg, F. (2024). Challenges of the supervision process in the teacher education practicum – A qualitative research review. *Teaching and Teacher Education*, *146*, 104619. https://doi.org/10.1016/j.tate.2024.104619

Boud, D., Keogh, R., & Walker, D. (Eds.). (1985). *Reflection: Turning Experience into Learning* (1st ed.). Routledge.

Braun, V., & Clarke, V. (2006). Using Thematic Analysis in Psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Byth, A. (2024). Addressing the hidden labour of mentoring pre-service teachers. *The Australian Educational Researcher*, *52*, 1451–1469 https://doi.org/10.1007/s13384-024-00770-9

Chrysafidis, K. (2013). *The teaching practicum in education departments: Between practicism and ineffective theoreticism* [Πρακτική Άσκηση Φοιτητών Παιδαγωγικών Τμημάτων. Ανάμεσα στον πρακτικισμό και την αναποτελεσματική θεωρητικολογία]. In A. Androusou & S. Avgitidou (Eds.), *The teaching practicum in initial teacher education: Research approaches* (pp. 173–196). Teaching Practicum Network, Department of Early Childhood Education, National and Kapodistrian University of Athens. [In Greek]

Clarke, A., Triggs, V., & Nielsen, W. (2014). Cooperating teacher participation in teacher education: A review of the literature. *Review of Educational Research, 84*(2), 163–202. https://doi.org/10.3102/0034654313499618

Creswell, J. W., & Plano Clark, V. L. (2017). *Designing and conducting mixed methods research* (3rd ed.). Sage.

Darling-Hammond, L. (2017). Teacher education around the world: What can we learn from international practice? *European Journal of Teacher Education, 40*(3), 291–309. https://doi.org/10.1080/02619768.2017.1315399

Dreer-Goethe, B. (2025). The impact of mentor support and high-quality connections on student teachers' psychological safety and engagement during practicum. *Frontiers in Education*, *10*. https://doi.org/10.3389/feduc.2025.1499749

Glickman, C. D., Gordon, S. P., & Ross-Gordon, J. M. (2024). *SuperVision and instructional leadership: A developmental approach* (11th ed.). Pearson.

Goldshaft, B. (2024). Mentoring in practicum: supporting student teachers' learning to notice with collaborative observational tools. *Professional Development in Education*, 1–20. https://doi.org/10.1080/19415257.2024.2441837

Gourgiótou, E., Kakana, D., Birbili, M., & Chatzopoulou, K. (2020). *Introduction: The Teaching Practicum Network of Early Childhood Education Departments—Ten years later* [Εισαγωγή: Το Δίκτυο Πρακτικών Ασκήσεων των Παιδαγωγικών Τμημάτων Προσχολικής Εκπαίδευσης: 10 χρόνια μετά]. In E. Gourgiótou, D. Kakana, M. Birbili, & K. Chatzopoulou (Eds.), *Teacher education and education departments: 30 years later—Addressing new challenges* (pp. 6–13). Proceedings of the 2nd Panhellenic Conference of the Teaching Practicum Network, Volos, Greece, September 28–30, 2018. University of Thessaly Press. https://press.uth.gr/wp-content/uploads/2020/08/ebook_praktika-2.pdf [In Greek]

Hattie, J., & Timperley, H. (2007). The Power of Feedback. *Review of Educational Research*, *77*(1), 81–112. https://doi.org/10.3102/003465430298487

Heinz, M. (2024). The practicum in initial teacher education – enduring challenges, evolving practices and future research directions. *European Journal of Teacher Education*, *47*(5), 865–875. https://doi.org/10.1080/02619768.2024.2428031

Hobson, A. J., Ashby, P., Malderez, A., & Tomlinson, P. D. (2009). Mentoring beginning teachers: What we know and what we don't. *Teaching and Teacher Education*, *25*(1), 207–216. https://doi.org/10.1016/j.tate.2008.09.001

Hudson, P. (2016). Forming the mentor–mentee relationship. *Mentoring & Tutoring: Partnership in Learning, 24*(1), 30–43. https://doi.org/10.1080/13611267.2016.1163637

Hunskaar, T. S., Lejonberg, E., & Nesje, K. (2025). Identifying mentee roles in tool-based practicum mentoring. *Mentoring & Tutoring: Partnership in Learning*, *33*(3), 294–316. https://doi.org/10.1080/13611267.2025.2471992

Jay, J. K., & Johnson, K. L. (2002). Capturing complexity: a typology of reflective practice for teacher education. *Teaching and Teacher Education, 18*(1), 73–85. https://doi.org/10.1016/s0742-051x(01)00051-8

Kalsoom, T., Showunmi, V., & Ibrar, I. (2019). A Systematic Literature Review on the Role of Mentoring and Feedback in Improvement of Teaching Practicum. *Sjesr*, *2*(2), 20-32. https://doi.org/10.36902/sjesr-vol2-iss2-2019(20-32)

Kyridis, A. (2023). *The teaching practicum in Greek higher education: Student attitudes and the connection between practicum and the labour market* [Η Πρακτική Άσκηση στην ελληνική τριτοβάθμια εκπαίδευση: Στάσεις και αντιλήψεις φοιτητικού πληθυσμού και η σύνδεση της Πρακτικής Άσκησης με την αγορά εργασίας]. INE/GSEE. https://www.inegsee.gr/wp-content/uploads/2023/01/NEWSLETTER_08.pdf [In Greek]

Letloenyane, P. C., Mokhele-Makgalwa, M., & Letloenyane, D. M. (2025). What Mentorship? Pre-Service and In-Service Teachers' Experiences of a Teaching Practice

Mentorship Programme. *Australian Journal of Teacher Education, 50*(3). https://doi.org/10.14221/1835-517X.6283

Li, M., Kuang, F., & Wei, D. (2023). Exploring the characteristics of pre-service EFL teachers' practicum experiences: a complexity theory-based case study in China. *Asian-Pacific Journal of Second and Foreign Language Education*, *8*(13). https://doi.org/10.1186/s40862-023-00187-4

Lofthouse, R. (2019). Coaching in education: a professional development process in formation. *Professional Development in Education*, *45*(1), 33–45. https://doi.org/10.1080/19415257.2018.1529611

Miller, L. (2023). Supervision to Support Reflective Practices. *Journal of Educational Supervision*, *6*(1), 1–18. https://doi.org/10.31045/jes.6.1.1

Papaioannou, M. (2025). *Mentoring relationships in the teaching practicum and the socio-emotional development of pre-service teachers* [Μεντορική σχέση στην Πρακτική Άσκηση και ψυχοσυναισθηματική βελτίωση υποψήφιων εκπαιδευτικών]. *Research in Education, 14*(1), 52–69. https://doi.org/10.12681/hjre.40494 [In Greek]

Schön, D. (1983). *The Reflective Practitioner: How Professionals Think in Action*. London: Temple Smith.

Schön, D. A. (1987). *Educating the reflective practitioner: Toward a new design for teaching and learning in the professions*. San Francisco, CA: Jossey-Bass

Sfyroera, M., Kortesi-Dafermou, C., Vouvousira, S., Kosmidou, E., Kostoudi, F., Bethani, M., & Stathi, M. (2020). *Supporting understanding and reflective processes in initial teacher education: The contribution of supervision* [Υποστηρίζοντας κατανοήσεις και αναστοχαστικές διαδικασίες στο πλαίσιο της αρχικής εκπαίδευσης εκπαιδευτικών: Η συμβολή της εποπτείας]. In E. Gourgiótou, D. Kakana, M. Birbili, & K. Chatzopoulou (Eds.), *Teacher education and education departments: 30 years later—Addressing new challenges* (pp. 267–281). Proceedings of the 2nd Panhellenic Conference of the Teaching Practicum Network, Volos, Greece, September 28–30, 2018. University of Thessaly Press. https://press.uth.gr/wp-content/uploads/2020/08/ebook_praktika-2.pdf [In Greek]

Toh, R. Q. E., Koh, K. K., Lua, J. K., Wong, R. S. M., Quah, E. L. Y., Panda, A., Ho, C. Y., Lim, N.-A., Ong, Y. T., Chua, K. Z. Y., Ng, V. W. W., Wong, S. L. C. H., Yeo, L. Y. X., See, S. Y., Teo, J. J. Y., Renganathan, Y., Chin, A. M. C., & Krishna, L. K. R. (2022). The role of mentoring, supervision, coaching, teaching and instruction on professional identity formation: a systematic scoping review. *BMC Medical Education*, *22*(531). https://doi.org/10.1186/s12909-022-03589-z

The Effects of Student-Led Conferences on Learning Motivation and Responsibility: An Action Research Study

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Abstract

During the 2023-2024 school year, 6th-grade students from an urban primary school in the Directorate of Piraeus participated in a parent reporting programme utilising the "Student-Led Conferences" (SLCs) method. The purpose of this action research was twofold: firstly, to empower students' involvement in informing their parents; and secondly, to investigate their views regarding the method's impact on their motivation and sense of personal responsibility for learning, as well as their perceptions of the implementation process. For data collection, a questionnaire with both closed and open-ended questions was administered at the end of the first and the third trimesters. The results indicated that SLCs were accepted as a positive pedagogical practice that reinforced students' active involvement, cultivated their autonomy and critical self-awareness, and contributed to the formation of responsible attitudes towards learning. Students' suggestions for improvement primarily focused on technical issues of implementation, confirming the acceptance of the method's pedagogical core.

Keywords: Student-Led Conferences, Action Research, Motivation, Responsibility, Self-Regulated Learning.

Introduction

In the Greek educational system, informing parents about their children's progress at the end of each term relies primarily on traditional practices. Typically, this is conducted through private meetings between the parent and the teacher, where the cognitive, social, and emotional aspects of the student's development are discussed. Even though the discussion concerns the child's learning trajectory, the student remains absent from the process, deprived of the opportunity to express their perspective by highlighting their achievements or discussing the difficulties encountered during the term (Fuge, 2018; Hackmann, 1996; Wyk, 2023). Consequently, the sense of ownership and personal responsibility that could be developed regarding their learning journey is limited (Benson & Barnett, 2005; Marquardt, 2003; Nauss, 2010; Shannon, 1997).

The "Student-Led Conferences" (SLCs) method was developed in the late 1980s in the United States (Guyton & Fielstein, 1989; Little & Allan, 1989). It aims to bridge the gap created by traditional parent information meetings by assigning a leading role to the student, who is required to present both their achievements and the challenges encountered during the term, utilising their individual portfolio (Benson & Barnett, 2005; Hackmann, 1996).

The method has been implemented across all levels of school education and appears to yield positive results by enhancing motivation and the personal sense of responsibility towards learning, thereby improving learning outcomes (Meyers, 1998; Nauss, 2010; Pihlgren, 2013).

Grounded in the philosophy of students' active engagement in the learning process, we chose to implement SLCs in a 6th-grade class of an urban primary school during the 2023–2024 school year. This decision stemmed, on one hand, from our concern regarding the

limited or non-existent opportunities students have to take an active role in presenting their learning journey, and on the other hand, from the reduced learning motivation observed in recent years (McCombs, 2015). Furthermore, the decision to conduct this specific study was reinforced by the absence of corresponding research within the Greek educational context.

Our objective was to investigate: (1) how students evaluate the SLCs method, and (2) to what extent they consider it helpful in increasing their motivation and personal sense of responsibility for learning.

Student Led Conferences (SLCs)

"Student-Led Conferences" (SLCs) constitute an alternative approach compared to traditional reporting, as students assume the responsibility of presenting their progress to their parents.

Although SLCs appear to focus on a specific moment, namely, the end of the term, it is a process that extends throughout the term (Benson & Barnett, 2005; Foster-King, 2011; Hackmann, 1996; Marquardt, 2003; Nauss, 2010) and comprises three distinct but interconnected phases:

Phase 1: Goal Setting and Planning This phase begins at the start of the term and recurs whenever students engage with new content. The teacher informs them about what will be taught and outlines the cognitive, social, and emotional objectives. Subsequently, through discussion and collaboration, the expected learning outcomes are defined, and the method by which each student will work to achieve them is planned.

Phase 2: Implementation, Feedback, and Reflection During the second phase, students implement the plan they have drafted. Simultaneously, they monitor their progress and proceed with adjustments if deemed necessary, receiving feedback from the teacher. They collect evidence, organise their portfolio, and formulate—in collaboration with the teacher—a presentation script by engaging in critical reflection on their learning journey. This script constitutes the basis upon which they will rely to inform their parents.

Phase 3: Presentation At the end of the term, students, taking a leading role, invite their parents to an official meeting to present their progress. The session is conducted in a private setting and at a scheduled time, with the presence of the teacher, who intervenes supportively if required. During the meeting, the student, utilising evidence from their portfolio, presents the goals they had set, the strategies followed, and the results achieved. Subsequently, they facilitate the discussion with the parents, who may ask questions and request clarifications. The process concludes with proposals for future cooperation between the child, the parents, and the teacher.

Findings from international literature indicate that, through SLC processes, students acquire motivation and a deeper awareness of their personal responsibility for their cognitive, social, and emotional development.

SLCs as a framework for enhancing motivation

Motivation for learning constitutes one of the most significant factors in school success. However, in school practice, we often encounter students lacking motivation for learning, especially if the school environment fails to focus on and cultivate their interests. Research indicates that SLCs increase students' motivation for learning as they place them at the centre of the learning process, transforming them from passive recipients of knowledge into active co-shapers of their learning trajectory (Benson & Barnett, 2005; Marquardt, 2003; Nauss, 2010; Shannon, 1997).

Self-Determination Theory (SDT) provides a robust framework for understanding how SLCs enhance student motivation. According to SDT, individual motivation increases when three basic psychological needs are supported: Autonomy, Competence, and Relatedness (Ryan, 2023).

The need for "Autonomy" concerns the individual's feeling of having the possibility of choice, in contrast to the feeling of control or coercion by others (Weir, 2025). SLCs support this need in multiple ways: Firstly, the student's leading role in the presentation during Phase 3 signals the transfer of control. It is the student who invites the parents, facilitates the discussion, and presents their achievements. Secondly, assuming responsibility for shaping the session's content through the selection and organisation of the work (portfolio) to be presented, reinforces the sense of ownership over the educational journey. (Wyk, 2023). Finally, Phase 1 (Goal Setting and Planning), which involves planning how the student will work to achieve their goals, empowers volition and autonomy in decision-making regarding their learning (Benson & Barnett, 2005; Hackmann, 1996).

The second psychological need that reinforces learning motivation is the sense of "Competence", defined as the individual's belief that they possess the ability to successfully perform a specific activity (Weir, 2025). SLCs satisfy this need through assessment and reflection. Assessment in SLCs functions as an authentic and supportive practice aiming to enhance learning rather than merely measure it (Kouloubaritsi & Matsagkouras, 2004). The comparison of student achievements is not based on the performance of their peers, but in relation to the personal goals they have set. This focus on individual progress protects their self-esteem and reinforces their sense of self-efficacy (Foster-King, 2011). Furthermore, reviewing the student portfolio based on evidence they have collected themselves allows them to view their developmental path holistically, examine their working methods, recognise their successes, identify points of difficulty, evaluate or revise the strategies followed, and take initiatives for the continuous improvement of their learning (Benson & Barnett, 2005; Foster-King, 2011; Kouloubaritsi & Matsagkouras 2004; Meyers, 1998; Nauss, 2010).

The need for "Relatedness" refers to the need to feel connected and belong to a supportive social context (Ryan, 2023). In this context, SLCs create a unique three-way framework (child, parents, teacher) which serves this need. The presence of the teacher, who intervenes only supportively (Benson & Barnett, 2005), signals the school's trust in the student's ability to manage their academic growth. This trust is strengthened as students assume the responsibility of shaping the content of the session with their parents (Berger et al. 2019; Nauss, 2010). Finally, the fact that the process concludes with proposals for future cooperation establishes social connection, ensuring that the student feels supported by all key adults in their life.

Table1: Student led conferences and self-determination theory

Basic Psychological Need (SDT).	SLCs Practices	Connection Between SLCs and SDT
Autonomy	• Setting personal learning goals • Selecting portfolio evidence • Student's leading role in presenting progress (Phases 1, 2, & 3)	Control shifts from external factors (teacher-parent) to the student, enhancing their autonomy through responsibility for their choices.
Competence	• Evidence-based self-assessment (portfolio) • Comparison of outcomes with personal goals • Encouragement of continuous improvement (Phase 2)	Assessment is formative and reflective, supporting the sense of competence and self-efficacy.
Relatedness	• Triadic meeting held in a private and supportive setting • Planning future cooperation (Parent-Child-Teacher) (Phase 3)	The environment in which progress is presented is safe and supportive, enabling the student to feel accepted and connected to the key adults in their life.

SLCs and Self-Regulated Learning (SRL)

The development of personal responsibility in learning is inextricably linked to students' ability to regulate their own learning (Cleary et al., 2020). The Theory of Self-Regulated Learning (SRL) encompasses a system of cyclically linked, goal-oriented skills and processes that allow students to manage their thoughts, behaviours, and emotions to achieve their learning goals (Panagakos & Tzanaki, 2007; Zumbrunn et al., 2011). With its cyclical structure, the SLC method functions as a structured SRL intervention.

SRL theory relies on cyclical models, with one of the most popular being Zimmerman's model, which develops across three phases: Forethought Phase, Performance Phase, and Self-Reflection Phase (Zimmerman & Moylan, 2009).

SLCs as a Cyclical Process of Self-Regulated Learning:

1st SLC Phase: *Goal Setting and Planning:* This corresponds to the "Forethought Phase". In this phase, students analyse the learning content, define their goals, and activate their strategies and motivation, planning how they will achieve the results (Benson & Barnett, 2005).

2nd SLC Phase: Implementation, Feedback, and Reflection: This corresponds to the "Performance Phase". Here, students execute the task, monitor their progress, and use self-monitoring strategies to remain dedicated and motivated (Panadero, 2017). The collection of evidence and the organisation of the portfolio constitute tangible proof of this self-monitoring (Nauss, 2010). Furthermore, by applying critical reflection and self-assessment, they understand how they learn and engage in metacognitive processes (Kouloubaritsi & Matsagkouras, 2004; Zimmerman & Moylan, 2009).

3rd SLC Phase: Presentation: The presentation functions as the culminating act of reflection and metacognition. Students assess their performance, recognise successes and points of difficulty, and proceed to the attribution of their results. Through these processes, they reinforce their metacognitive skills, which will influence their approach to future tasks (Gay, 2011; Zimmerman & Moylan, 2009). The completion of the presentation with proposals for

future improvement closes the loop, providing data for the next forethought and planning phase.

From the above, we conclude that SLCs directly enhance the student's sense of responsibility. Initially, students realise that learning is a continuous path for which they bear the primary share of responsibility, and they are encouraged to commit to their continuous progress (Wyk, 2023). Furthermore, their internal commitment transforms into accountability (Harris-Wilmot, 2025), as they are called upon, utilising their communication skills, to explain to their parents how they worked, the concepts and ideas they mastered during the term, and to proceed with their next planning steps.

Table 2: Alignment of student led conferences with self-regulated learning and responsibility

SLC Phases	SRL Phases	Responsibility Enhancement
Phase 1: Goal Setting & Planning	Forethought Phase	• Goal setting • Motivational orientation • Autonomy in planning
Phase 2: Implementation, Feedback & Reflection	Performance Phase	• Responsibility in collecting evidence (Portfolio) • Critical Thinking • Metacognition
Phase 3: Presentation	Self-Reflection Phase	• Accountability • Communication skills • Planning future initiatives

In summary, the literature review indicates that SLCs function as a coherent learning framework, integrating the key elements of Self-Determination Theory and Self-Regulated Learning. Specifically, SLCs support students' intrinsic motivation and self-determination by satisfying their three basic psychological needs: autonomy (in goal setting), competence (in goal achievement), and relatedness (social interaction). Simultaneously, the method facilitates Self-Regulated Learning processes (such as goal setting, planning, monitoring, assessment, and reflection), thereby cultivating students' personal responsibility for their learning journey.

Research Questions

Based on the aforementioned literature, it was hypothesised that the implementation of SLCs in the 6th Grade of a Greek urban Primary School would reinforce the students' role in parent reporting and could simultaneously increase their sense of personal responsibility and motivation for learning.

To investigate this hypothesis, the following research questions were formulated:

1. To what extent do students participating in SLCs processes consider that the method contributed to enhancing their motivation and responsibility for their learning progress?
2. Do students' perceptions regarding the impact of SLCs on their motivation and responsibility remain constant or change over time?
3. Which elements of the SLC method do students evaluate positively?
4. What emotions does their participation in the method evoke?
5. Which elements of the method do they consider less effective or negative?
6. What suggestions do students make for the improvement of SLCs processes?

The research findings are expected to strengthen or weaken the prospect of wider implementation of SLCs in Greek school units, while simultaneously providing useful knowledge for educators and stakeholders interested in introducing innovative practices to the Greek educational system.

Methodology

The observation that traditional forms of reporting are limited to teacher-parent interaction, without substantial student involvement, combined with the continuously declining student motivation in recent years, served as the starting point for a literature review. The aim of this review was to identify pedagogical methods that could effectively resolve the issue. From the study of relevant literature, SLCs emerged as a pedagogical approach with positive documented results.

The selection of Action Research as a methodological approach was deemed appropriate, as it combines the implementation of innovative pedagogical practices with the reflective investigation of their effectiveness in the natural educational environment. Simultaneously, it offers the teacher the opportunity to reflect systematically on their practice, aiming for its improvement and transformation (Avgitidou, 2014; Katsarou & Tsafos, 2013). As Katsarou and Tsafos (2013) argue, it is a process of dialogue between theory and practice, during which theory is re-evaluated through its implementation and, correspondingly, practice is enriched based on theoretical documentation, leading to the production of new pedagogical knowledge.

This specific methodology enhances teachers' professional development, as it provides a framework for understanding and managing problematic situations in daily school life. In other words, it functions as a form of reflective study on an existing problem, within a specific context, aiming at intervention and the improvement of educational practice (Avgitidou, 2014).

In this context, the present study was designed and implemented, involving seventeen (17) students from a 6th-grade class in an urban Primary School. The teacher in charge proceeded with its implementation, following five distinct actions:

Action 1: Information: At the beginning of the school year, parents and students were informed about the differentiations that would be adopted in the usual progress reporting process, within the framework of SLCs implementation. Additionally, the parents provided written consent for their children to complete a questionnaire at the end of the 1st and 3rd trimesters.

Action 2: Goal Setting & Organisation: From the beginning of each term, and throughout its duration, students were informed about the educational process goals. In collaboration with the teacher, they formulated the corresponding expected learning outcomes, which were linked to daily school life and specific subjects (Language, Mathematics, History, Geography, Science). At the same time, the teacher supported the children in the process of organising and enriching their portfolio, applying a gradual withdrawal of guidance in each term, aiming to strengthen their autonomy.

Action 3: Preparation: Two weeks prior to each meeting with parents, students, with gradually decreasing guidance from the teacher, drafted their personal presentation script. In this script, they recorded the purpose of inviting their parents, the goals they had set, the actions they took, the difficulties they encountered, the tasks related to their goals, as well as the form of support they wished to receive from family and school. Students practised presenting their script in groups and reformulated it based on feedback received from their classmates and the teacher.

Action 4: Implementation: One week before the presentation, students prepared invitations for their parents. On the scheduled day, they conducted the reporting meetings, lasting approximately 20–30 minutes, in accordance with the SLC philosophy, across all three terms of the school year.

Action 5: Evaluation: Following the completion of the meetings in the first and third terms, students were asked to complete a feedback-evaluation questionnaire regarding the method.

Sample and Research Instrument

The study participants consisted of seventeen (17) students from the 6th Grade of an urban Primary School, located in a middle-class area of Piraeus. Specifically, there were eight (8) girls and nine (9) boys. Sixteen (16) students were of Greek origin, while one (1) student was of Albanian origin, fully integrated into the Greek school environment. Furthermore, two students in the class had formal diagnoses of learning difficulties: one with dyslexia and the other with attention deficit hyperactivity disorder (ADHD). Additionally, two students were facing difficulties in managing their anxiety. The overall cognitive level of the class was medium. Specifically, 20% of the students had a high cognitive level, 70% had a medium cognitive level, and 10% had a low cognitive level.

The research instrument was designed based on the literature review of relevant studies (Benson & Barnett, 2005; Foster-King, 2011; Fuge, 2018; Hackmann, 1996; Orso & Morgan, 2014) and our multi-year experience as educators in the Greek educational system. It included both closed and open-ended questions, allowing for the collection of quantitative and qualitative data, aiming for a more comprehensive research approach (Isari & Pourkos, 2015).

It focused on: (a) the impact of SLCs on enhancing motivation and the personal sense of responsibility (accountability) for the learning trajectory, and (b) capturing students' views regarding SLCs processes and the emotions generated during the presentation of their progress.

It should be noted that, for the purposes of the classroom intervention, the method was introduced to students under the title "I present my progress" to make it more accessible and understandable. Consequently, this phrasing was used in the questionnaire items.

The instrument was divided into two sections. The first section consisted of seven (7) closed questions using a 5-point Likert scale, where one (1) indicated "strongly disagree" and five (5) indicated "strongly agree". It included three (3) questions referring to student motivation, such as: *"The 'I present my progress' programme helped me try harder in my lessons throughout the term"*, and four (4) questions referring to the personal sense of responsibility for learning (accountability), such as: *"The 'I present my progress' programme helped me feel responsible for my learning and progress"*.

The second section comprised four (4) open-ended questions addressing views on the positive and negative aspects of SLCs, the emotions created during participation, and students' suggestions for improving SLC processes.

The questionnaire was administered twice. It was completed for the first time at the end of the first term and for the second time at the end of the third term; in both instances, this took place after the children's participation in the SLCs. The objective of this double administration was to determine whether students' perceptions of SLCs remain constant or change over time.

We chose not to examine the reliability of the research instrument because our goal was the improvement of pedagogical practice within the specific context, rather than the standardisation of tools (Cohen, et al., 2007). Furthermore, checking for reliability with indices such as Cronbach's Alpha would not offer stable or reliable information for this specific questionnaire due to the small number of items (Pallant, 2010).

The following section presents the analysis of the quantitative and qualitative data collected.

Data Analysis

For the processing of quantitative data, Microsoft Excel software was used, with the support of the Real Statistics add-in, applying descriptive statistics and inferential statistics. The analysis of qualitative data was carried out through thematic content analysis, according

to which researchers familiarise themselves with the data, code them, identify recurring themes, review and restructure the findings, name the themes, and write up the analysis findings (Isari & Pourkos, 2015).

The results emerging from the data analysis are presented below.

Quantitative Analysis Results

Based on the collected quantitative responses on a 1-5 Likert scale, four (4) new variables were created, two (2) for each term. Specifically, two (2) new variables were created representing the mean scores of responses regarding motivation, one for the first and one for the third term, named "Motivation". Another two (2) variables were created representing the mean scores of responses related to the personal sense of responsibility (accountability) for learning, one for each term, first and third, named "Responsibility".

Descriptive statistics were performed for the description of the variable "Motivation" for both time points (first and third term).

The results are shown in Table 3.

Table 3: Impact of SLCs on learning motivation

Term	N	Mean	Standard Deviation	Median	Maximum	Minimum	Shapiro-Wilk Test
1ο	17	4,33	0,63	4,67	5	3	0,00484
3ο	17	4,27	0,77	4,50	5	3	0,00836

The data indicate that students positively evaluated the impact of SLCs on their learning motivation during both the first and the final terms of the school year. The mean score at both time points was high (M = 4.33 and M = 4.27, respectively, on a 1–5 scale).

Due to the non-normality of the variables, a Wilcoxon signed-rank test for paired samples was conducted to determine whether the differences between the first and third terms were statistically significant. The test indicated that there is no statistically significant difference in students' perceptions regarding the impact of SLCs on their learning motivation between the first and third terms (z = 0.35, p = .735), with a very small effect size (r = .097). The median for the impact of SLCs on learning motivation was Mdn = 4.67 in the first term and Mdn = 4.50 in the third term.

Regarding the "Responsibility" variable, a descriptive statistical analysis was performed on the data from the first and third terms, which are presented in Table 4:

Table 4: Impact of SLCs on learning responsibility

Term	**N**	**Mean**	**Standard Deviation**	**Median**	**Maximum**	**Minimum**	**Shapiro-Wilk test**
1ο	17	4,56	0,38	4,5	5	3,75	0,083
3ο	17	4,35	0,49	4,5	5	3,25	0,011

The descriptive statistics indicate that students positively evaluated the impact of SLCs on their personal sense of responsibility for learning during both the first and third terms of the school year. The mean score at both time points was high (M = 4.56 and M = 4.35, respectively, on a 1–5 Likert scale), suggesting that most children perceive the method as a means of enhancing their personal sense of responsibility for learning.

To determine whether the difference in views between the first and third terms regarding the personal sense of responsibility for learning was significant, a non-parametric Wilcoxon signed-rank test for paired samples was conducted. The test indicated that there is no statistically significant difference in students' perceptions regarding the impact of SLCs on their personal sense of responsibility for learning between the first and third terms (z = 1.81,

p = .072), although the effect size appeared to be moderate (r = .47). The median for the impact of SLCs on the sense of responsibility for learning was identical for both the first and third terms (Mdn = 4.5).

Qualitative Analysis Results

Student responses to the four open-ended questions were analysed using thematic content analysis (Isari, & Pourkos 2015). During the processing phase, four themes were established, corresponding to the questions: (a) What do you like about the "I present my progress" programme? (b) How did you feel during the presentation of your progress to your parents? (c) What did you not like about the process of presenting your progress? (d) If you could change something to make the process better, what would it be?

Statements were grouped into sub-themes emerging from the analysis of the responses. Finally, a comparison was conducted between the statements of the first and third terms to capture potential changes in the children's views regarding the implementation of the SLC method.

Table 5 presents the themes, sub-themes, and the frequency of each sub-theme in students' responses for the first and third terms.

Table 5: Student views on SLC implementation (terms 1 & 3)

Themes	Sub-themes	Frequency term 1	Frequency term 2
Positive Aspects	Autonomy & Responsibility	9	8
	Self-awareness & Self-assessment	5	7
	Connection with parents	3	3
	Process structure and organisation	4	1
Emotions	Anxiety	9	9
	Joy, Excitement & Pride,	9	10
	Shyness, Discomfort & Fear	3	4
	Understanding, Relief & Comfort	2	1
Negative aspects	No negative aspects reported	10	10
	Presentation duration	1	-
	Excessive writing	3	4
	Critique of personal performance	3	2
Suggestions for improvement	No aspects for improvement reported	9	9
	Reducing written workload	4	4
	Procedural suggestions (oral delivery, computer usage, specific timing)	2	1
	Focus on self-improvement	1	2

Regarding the 1st Theme: "What did you like about the programme?", it is observed that in the students' comments, during both the first and third terms, the opportunity provided by the method for autonomy and responsibility prevails:

"That we express our opinion and experience what teachers do" (S.1). *"I liked that instead of the teacher presenting, I was presenting"* (S.3). *"I like that now we are the ones talking to our parents about our progress"* (S.14).

Furthermore, it is observed that in the third term, the frequency of references to issues of self-awareness and self-assessment increases:

"That I have the opportunity to explain to my parents the progress and the difficulties I faced" (S.4). *"That I chose what to show and explained what I understood and what I didn't"* (S.9). *"I like that I realised on my own the things I achieved"* (S.13).

Following with fewer statements in both terms are the themes of connection with parents and process structure/novelty:

"That mum and dad are smiling" (S.6). *"I like that the teacher and my parents understand how I feel about school"* (S.8). *"I like the way I present my progress to my parents"* (S.10). *"I like that... we learn to organise better and I present my papers on my own... and I can know from early on what we will do in the coming term"* (S.12).

Regarding the 2nd Theme: "How did you feel during the presentation of your progress?", children report with almost equal frequency, in both terms, emotions of anxiety and joy-pride, as often one follows the other:

"I didn't feel anxiety, on the contrary, joy" (S.2). *"At first, I was anxious but along the way I was relieved and felt joy for what I achieved"* (S.4). *"I felt a little anxiety but then I got over it, also I felt that I had grown up"* (S.5).

Following with lower frequency are feelings of shyness or fear:

"I was quite shy but then I got used to it" (S.11). *"Anxious about my parents' reactions, anxiety and fear"* (S.16).

Regarding the 3rd Theme: "What did you not like about the process?", the majority of students in both terms answer that they had no problem:

"Nothing, everything was excellent" (S.8). *"I didn't have any problem"* (S.17).

The issue that follows in students' statements in both terms relates to writing the presentation script:

"That I had to spend a lot of time writing the script" (S.12). *"...that afterwards we had to write it out neatly"* (S.11).

It is worth noting that a number of children, on the issue of "what did you not like", chose to reflect on their own student behaviour:

"I don't like that I had many difficulties" (S.6). *"What I didn't like at all is that I couldn't find an example where I could prove why I am not doing well or the opposite"* (S.13).

Regarding the 4th Theme: "What would you change in the process?", in both terms, the majority of children state that they would not change anything:

"I wouldn't change anything" (S.9). *"The process was perfect and I don't want anything to change"* (S.3).

Following is the topic of scriptwriting, with suggestions being offered:

"To only say it orally" (S.4). *"I would write a shorter script"* (S.12). *"To do it with the help of computers"* (S.16).

In this theme as well, in both terms, some children choose to reflect on their student behaviour and state what they would like to change on a personal level:

"To organise my work a little better because I couldn't find my worksheets" (S.15). *"To be diligent and responsible for my work"* (S.13). *"Not to get stuck on my words"* (S.6).

The discussion of conclusions, research limitations, and proposals follows.

Discussion - Conclusions

From the quantitative results of the present action research, it was ascertained that the children of the specific class maintain a consistently positive perception, over time, regarding the impact of SLCs on both their motivation for learning and their sense of personal responsibility for learning. Specifically, stability was observed in students' responses across both variables, "Motivation" and "Responsibility". This fact can be interpreted as an indication that SLCs were not evaluated by the children with the temporary enthusiasm that usually accompanies the introduction of an innovation, but rather maintained the position of a consistently positive pedagogical practice in their consciousness. This view is reinforced by the high medians for both variables in both administrations of the questionnaire (Motivation: Term 1 Mdn=4.67, Term 3 Mdn=4.50 Responsibility: Term 1 Mdn=4.5, Term 3 Mdn=4.5). This element indicates that the majority of students positioned themselves at the upper end of the scale regarding the impact of SLCs. This finding is consistent with research highlighting that when students have the opportunity to explain their goals and progress—as occurs in SLCs—both motivation and their personal sense of responsibility for learning increase, as through

such processes they are called upon to reflect on how they learn and to take initiatives for the improvement of their learning (Fuge, 2018; Gay, 2011; Guyton & Fielstein, 1989; Marquardt, 2003; Pihlgren, 2013).

The qualitative results reinforce the quantitative findings, demonstrating that children experienced the SLCs method as a process that strengthened their autonomy and sense of responsibility. The frequent reference to the phrase *"we speak to parents about our progress"* suggests that children perceived themselves as active agents of the learning process. Moreover, the shift in the third term towards statements concerning their self-awareness and self-assessment indicates that, with the passage of time, students moved from initial enthusiasm to a more mature, reflective attitude towards learning. Additionally, the students' references to the connection with their parents confirm the satisfaction of the need for Relatedness, the third pillar of Self-Determination Theory. The process appeared to strengthen the social bond, as students felt supported and understood by the significant adults in their lives. Other relevant studies reach similar conclusions (Avdelli & Giannakopoulou, 2024; Gay, 2011; Hackmann, 1996; Marquardt, 2003).

Correspondingly, regarding the theme "How did you feel?", the coexistence of anxiety and joy/pride reveals that the process constituted a challenge with a positive connotation: the anxiety of exposure was gradually transformed into satisfaction and a sense of personal growth (*"I felt that I had grown up"*). This aligns with the literature, where similar studies observe the development of identical or similar emotions, a fact indicating that assuming a presentation role enhances students' self-confidence and self-regulation (Avdelli & Giannakopoulou, 2024; Gay, 2011; McGloin, 2022; Tuinstra & Hiatt-Michael, 2004).

Regarding the questions on what they did not like or what they would change to improve the method, the majority stated "no problem" or "I wouldn't change anything", which demonstrates a high degree of acceptance of the method. The few criticisms mainly concerned technical issues (e.g., excessive writing, lack of time for scriptwriting), which appear to emerge in similar studies abroad as well (Tuinstra & Hiatt-Michael, 2004). An interesting finding is the appearance of statements of personal self-criticism (*"I struggled to find examples"*, *"to be more responsible"*), which highlights the development of critical self-awareness and metacognitive skills. This element connects with the quantitative data that showed consistently high values for responsibility, as well as the qualitative elements of the first theme that indicated students' disposition for self-assessment. Consequently, it could be argued that SLCs in this specific context appeared to function as a factor encouraging not only the presentation but also the reflection on the processes students follow to learn (Fuge, 2018; Pihlgren, 2013).

Overall, it appears that students evaluated SLCs as a positive experience that helped them take initiatives, reflect on their successes and difficulties, and experience learning as a personal process.

The limitations of the present study and proposals for future research on the issue of SLCs follow.

Limitations and Proposals for Future Research

The present study provided significant evidence regarding the impact of the "Student-Led Conference" (SLC) method on the motivation and personal sense of responsibility (accountability) for learning among 6th-grade students in a Greek urban Primary School. However, we are cognizant of the fact that it was conducted as action research within a specific context and with a small sample size; consequently, there are limitations that must be taken into consideration when interpreting the results.

Specifically, the small number of participants does not allow for the generalisability of findings to a broader student population. Furthermore, the fact that the class teacher functioned as the researcher may have influenced the students' behaviour, who might have formulated responses that were more positive than they actually felt (social desirability bias).

Finally, the instrument utilised was designed for the needs of this specific action research and has not been extensively tested regarding its psychometric reliability and validity. However, it was deemed appropriate for capturing the students' views and lived experiences within the specific context.

Despite these limitations, the research highlighted useful conclusions regarding the pedagogical value of SLCs, which are in agreement with other international studies. Thus, we consider that prospects open up for further study within the Greek educational context. Future research could:

- be conducted with a larger sample of students and across more schools, to enhance the potential for generalisability,
- investigate the long-term impact of the method on the development of self-regulation and critical self-awareness skills,
- utilise psychometrically validated tools to measure motivation and responsibility,
- study the contribution of the method across different age levels and learning environments.

In this way, it will be possible to strengthen the documentation of SLC effectiveness and to utilise the results within the broader Greek educational framework.

References

Avdelli, Th., & Giannakopoulou, K. (2024). Mathitokentriki Enimerosi Goneon: Meleti Periptosis [Student-Led Conferences: A case study]. *Proceedings of the 10th International Conference on the Promotion of Educational Innovation: October 18-20, 2024, Larissa. EEPEK.*

Avgitidou, S. (2014). *Oi ekpaideftikoi os erevnites kai os stochazomenoi epangelmaties: Ypostirizontas tin epangelmatiki mathisi gia mia symmetochiki kai synergatiki ekpaidefsi* [Teachers as researchers and reflective practitioners: Supporting professional learning for participatory and collaborative education]. Gutenberg.

Benson, B. B., & Barnett, S. B. (2005). *Student led conferencing using showcase portfolios* (2nd ed.). Corwin Press.

Berger, R., Villen, A., & Woodfin, L. (2019). *The leaders of their own learning companion: New tools and tips for tackling the common challenges of student-engaged assessment*. Jossey-Bass.

Cleary, T. J., Callan, G. L., & Pawlo, E. R. (2020). Self-regulated learning in school contexts. In F. C. Worrell, T. L. Hughes, & D. D. Dixson (Eds.), *The Cambridge handbook of applied school psychology*, (pp.194–212). Cambridge University Press.

Cohen, L., Manion, L., & Morrison, K. (2007). *Research Methods in Education* (6th ed.). Routledge.

Foster-King, A. (2011). *Student-led conferences: Perceptions held by parents of children attending a christian elementary school* [Doctoral dissertation, Pepperdine University]. Pepperdine Digital Commons.

Fuge, D. J. (2018). *Student led conferences by first grade students: Parent perspectives* (Publication No 13427753) [Doctoral dissertation, Regent University]. Proquest.

Gay, C. W. (2011). *Exploring student ownership and responsibility through student-led conferences: A case study of one elementary school.* (Publication No. 3480638) [Doctoral dissertation, Auburn University]. Proquest.

Guyton, J. M., & Fielstein, L. L. (1989). Student-led parent conferences: A model for teaching responsibility. *Elementary School Guidance & Counseling, 24*(2), 169–172.

Hackmann, D. G. (1996). Student-led conferences at the middle level: Promoting student responsibility. *NASSP Bulletin, 80*(578), 31–36.

Harris-Wilmot, C. (2025). *Exploring the use of student-led conferences in a Title 1 elementary school* [Doctoral dissertation, Walden University]. Scholarworks Waldenu.

Isari, F., & Pourkos, M. (2015). *Poiotiki methodologia erevnas. Efarmoges stin psychologia kai stin ekpaidefsi [Qualitative Research Methodology: Applications in Psychology and Education].* Hellenic Academic Libraries Association.

Katsarou, E., & Tsafos, V. (2013). Student teachers as researchers: Towards professional development orientation in teacher education. Possibilities and limitations in the Greek university. *Educational Action Research, 21*(4), 532–548. https://doi.org/10.1080/09650792.2013.851611

Kouloumparitsi, A., & Matsagkouras, H. (2004). Fakelos ergasion tou mathiti (portfolio assessment): I authentiki axiologisi sti diathematiki didaskalia [Student Work Portfolio (Portfolio Assessment): Authentic Assessment in Interdisciplinary Teaching]. In Agkelidis, P. & Mavroeidis, G. (Eds.), *Educational Innovations for the School of the Future,* (Vol. A, pp. 55–83). Typothito.

Little, A. W., & Allan, J. (1989). Student-led parent-teacher conferences. *Elementary School Guidance & Counseling, 23*(3), 210–218.

Marquardt, P. R. (2003). *Integrating student led conferences into an elementary classroom* [Graduate project, Central Washington University]. CWU Libraries Scholarworks.

McCombs, B. (2015). *Developing responsible and autonomous learners: A key to motivating students*. American Psychological Association https://www.apa.org/education-career/k12/learners.

McGloin, K. (2022). *How can I give choice and responsibility to pupils in assessment of and for their learning to enhance pupil autonomy?* [Master's thesis, National University of Ireland Maynooth]. MURAL.

Meyers, P. (1998). *The effect of student led conferences on students, parents, and teachers* [Master's thesis, California State University]. CSUSE Scholarworks Library.

Nauss, S. A. (2010). *Student led conferences: Student taking responsibility* [Master's thesis, Southern Wesleyan University]. ERIC. https://files.eric.ed.gov/fulltext/ED516784.pdf.

Orso, C., & Morgan, B. (2014). A comparison of ELL and non-ELL students' and guardians' perceptions of student led conferences. *Journal of Contemporary Research in Education, 3*(1&2), 59–74.

Pallant, J. (2010). *SPSS survival manual* (4th ed.). Open University Press.

Panadero, E. (2017). A review of self-regulated learning: Six models and four directions for research. *Frontiers in Psychology, 8*, 1–28.

Panagakos, I., & Tzanaki, C. (2007). Ena montelo aftorythmizomenis mathisis [A Model of Self-Regulated Learning]. *Scientific Forum, 6*, 90–96.

Ryan, R. M. (2023). *The Oxford handbook of self-determination theory*. Oxford University Press.

Shannon, C. C. (1997). Student-led conferences: A twist on tradition. *Schools in the Middle, 6*(3), 47–49.

Tuinstra, C., & Hiatt-Michael, D. (2004). Student-led parent conferences in middle schools. *School Community Journal, 14*(1), 59–80.

Weir, K. (2025, March 25). *Self-determination theory: A quarter century of human motivation research*. American Psychological Association. https://www.apa.org/research-practice/conduct-research/self-determination-theory.

Wyk, L. V. (2023). *Student-led conferences in the early childhood classroom* [Master's thesis, Dordt University]. Dordt Digital Collections.

Zimmerman, B. J. (2009). Self-regulation: Where metacognition and motivation intersect. In D. J. Hacker, J. Dunlosky, & A. C. Graesser (Eds.), *Handbook of metacognition in education,* (pp. 299–315). Routledge.

Zumbrunn, S., Roberts, D. E., & Tadlock, J. (2011). *Encouraging self-regulated learning in the classroom: A review of the literature*. Metropolitan Educational Research Consortium (MERC). Virginia Commonwealth University.

ChatGPT and DeepSeek in the Physics Classroom: Affordances, Limitations, and Practical Applications

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Abstract

The rapid emergence of large language models (LLMs) is reshaping the landscape of physics education by offering new avenues for conceptual exploration and individualized support. This study examines the classroom affordances and limitations of two prominent LLMs—ChatGPT and DeepSeek—through a comparative analysis of their dialogic, representational, and reasoning capacities. Drawing on recent research in physics and science education, the article investigates how these tools can facilitate inquiry, scaffold problem solving, and enhance inclusive practices while also posing challenges related to bias, accuracy, and teacher authority. Particular attention is given to their complementary strengths: ChatGPT's conversational flexibility and accessibility, and DeepSeek's structured reasoning and technical precision. Pedagogical and ethical implications are discussed alongside recommendations for hybrid applications and teacher-led orchestration. The findings provide evidence-informed guidance for educators, curriculum designers, and policymakers seeking to integrate artificial intelligence into physics instruction without compromising critical thinking or equitable access.

Keywords: Artificial Intelligence, Physics Education, ChatGPT, DeepSeek, Educational Technology

Introduction

The incorporation of Artificial Intelligence (AI) in education has established a revolutionary environment where the distinctions between human cognition and machine assistance are perpetually redefined. In science and physics education, AI has evolved from a basic technological tool to a pedagogical entity that shapes the introduction, negotiation, and application of concepts in the classroom. Among the contemporary AI technologies, large language models (LLMs) like ChatGPT and DeepSeek illustrate divergent functionalities: ChatGPT engages in dialogic, open-ended exchanges, whereas DeepSeek provides structured, domain-specific assistance (Kotsis, 2025a). Comprehending these distinctions is crucial for assessing their use in the classroom, especially in physics education, where abstract theories frequently test students' ability to connect representations, experiments, and mathematical reasoning.

Historically, AI applications in education have focused on adaptive learning platforms, automated assessments, and intelligent tutoring systems (Luckin et al., 2016; Roll & Wylie, 2016). Nonetheless, the conversational capabilities of LLMs have created new opportunities for promoting student-centered interaction. In contrast to conventional tools, ChatGPT and DeepSeek emulate educational roles that surpass just material delivery, facilitating novel types of communication and support. ChatGPT enables students to articulate their thoughts through repeated questioning, thus facilitating conceptual inquiry. Conversely, DeepSeek prioritizes efficiency and systematic reasoning, generating solutions that are succinct and frequently customized for problem-solving endeavors. These complementary capabilities prompt an inquiry into the effective integration of such tools into classroom practices, ensuring that the function of educators is not undermined and that intricate discipline knowledge is not oversimplified.

Physics education, characterized by its dependence on models, experiments, and abstract conceptual frameworks, offers a particularly rich context for examining the role of LLMs. Studies have regularly shown that students find it challenging to align ordinary experiences with formal scientific ideas, particularly in mechanics, energy, and relativity (diSessa, 1993; Duit & Treagust, 2012). Educators have conventionally tackled these challenges by developing inquiry-based activities, employing analogies, or facilitating peer discussions. Recent research indicates that ChatGPT can be seamlessly incorporated into inquiry-based science curricula to enhance these pedagogical strategies (Kotsis, 2024a). AI tools now infiltrate this domain with the capacity to enhance these practices: they can facilitate inquiry, produce representations, and deliver instantaneous feedback. However, their presence raises inquiries regarding the overdependence on machine-generated explanations, the epistemic authority of artificial intelligence, and the extent to which these systems conform to the established objectives of promoting scientific literacy.

This research aims to analyze the classroom benefits and applications of ChatGPT and DeepSeek in physics teaching. This discussion places the two tools inside practical teaching contexts, rather than concentrating on theoretical frameworks and pedagogical ideologies, as explored in the first companion paper. It examines how educators and learners may utilize these AI systems for conceptual understanding, problem-solving, experimental reasoning, and reflective discourse. Furthermore, it assesses how the dialogic openness of ChatGPT and the structured precision of DeepSeek may either enhance or contradict conventional teaching methodologies. This approach is essential for educators, curriculum developers, and politicians who must address the ethical, epistemological, and pedagogical ramifications of integrating AI in educational institutions.

This study emphasizes that AI tools are not neutral technology; rather, they function as instructional agents that influence students' experiences in science by prioritizing classroom practice. Their effective incorporation into pedagogy relies on harmonizing their capabilities with discipline goals and the overarching aims of education. In physics education, where fostering inquiry, critical thinking, and epistemic agency is paramount, the comparative utilization of ChatGPT and DeepSeek may yield insights into how AI can both enhance and limit learning. This work contributes to the discourse on how AI might enhance not only efficiency in learning but also depth, creativity, and genuine participation with scientific processes.

Consequently, this article presents a focused empirical and conceptual analysis of how large language models can be pedagogically embedded in physics education. Through a comparative examination of ChatGPT and DeepSeek, this study explores how their distinctive capabilities can support conceptual understanding, experimental reasoning, and inclusive classroom practice, while also addressing associated ethical and methodological considerations. The study aims to inform researchers, educators, and policy makers seeking to integrate AI tools into science curricula in ways that preserve inquiry, critical thinking, and equitable access to high-quality physics learning.

Classroom Affordances of ChatGPT and DeepSeek

The practical utility of big language models in physics education depends on the extent to which their capabilities are integrated into routine classroom activities. ChatGPT's significant addition is its ability to maintain conversational interaction that resembles real-time instruction. In whole-class discussions, small-group activities, or individual exercises, the model can elicit student ideas, interrogate reasoning with subsequent inquiries, and produce counterexamples or analogies that reveal and disrupt misconceptions before they solidify into erroneous schemas (Ding et al., 2023; Graesser, Chipman, Haynes, & Olney, 2005). Due to their immediacy and adaptability, these interactions are ideally suited for formative assessment cycles, wherein educators assess comprehension and learners obtain contingent feedback that directs subsequent actions, especially when tackling enduring misconceptions

in physics (Kotsis, 2025b). Empirical research on dialogic education indicates that such a response facilitates metacognitive monitoring and self-explanation—two mechanisms closely linked to lasting conceptual advancements in physics (Chi & Wylie, 2014).

In addition to communication, ChatGPT provides an adaptable representation. It can rephrase an explanation at an alternative reading level, convert specialized terminology into common English, and suggest other representational formats—verbal, symbolic, or qualitative descriptions—to align with learners' representational fluency (Ainsworth, 2006). In laboratory-related tasks, students can utilize the model to devise measurement procedures, foresee potential sources of mistake, or create prediction–explanation–observation prompts that equip them for practical work. Such AI-supported scaffolding is particularly valuable in low-cost experimental settings, where simple homemade apparatuses can be used to teach fundamental thermal concepts through qualitative demonstrations (Stylos & Kotsis, 2021). Addressing students' persistent misconceptions about heat and temperature across educational levels further underscores the importance of carefully structured experimental activities (Kotsis et al., 2023). These practices conform to inclusive design principles: varying explanation depth, providing alternative phrasings, and utilizing scaffolded question prompts can mitigate obstacles for multilingual learners and students requiring additional practice with disciplinary discourse (Eden, Adeleye, & Adeniyi, 2024; Nam & Bai, 2023). Teachers can regulate classroom discussions by providing specific role instructions to ChatGPT (for instance, "ask me three questions that assess my understanding of Newton's third law, one at a time"), transforming an open-ended generator into a structured formative routine that enhances teacher facilitation rather than undermining it (Roll & Wylie, 2016).

The advantages of DeepSeek are most apparent when training necessitates a rigorously structured and precisely articulated presentation. Physics subjects that entail significant intrinsic cognitive load—such as complex derivations in electromagnetism, boundary conditions in thermodynamics, or the relationship between graphical and analytical representations of motion—are enhanced by worked-example sequences that reduce extraneous cognitive demands while emphasizing problem schemas (Sweller, Ayres, & Kalyuga, 2011). With these scenarios, DeepSeek's methodical and clearly organized responses assist students with monitoring goal-subgoal relationships, maintaining symbol consistency, and linking vocal statements to formal expressions. Studies on intelligent tutoring systems demonstrate that organized coaching enhances procedural fluency and near-transfer performance, especially for novices developing problem schemas (VanLehn, 2011). DeepSeek prioritizes succinct, curriculum-aligned formulations, making it effective for producing practice sets with rubric-aligned solutions, generating exam-style feedback that identifies deviations from standard solution paths, and providing concise reference summaries that reinforce terminology during revision.

When educators combine both approaches, complementary advantages become actually applicable. A standard sequence commences with dialogic elicitation to externalize students' intuitive models and generate constructive cognitive conflict; it advances with focused, structured clarification that restructures concepts into disciplinary formats; and it concludes with succinct dialogic reflection to solidify new insights and foresee boundary conditions or exceptions. This alternation utilizes various learning mechanisms—engagement and sense-making on one side, and reduction of extraneous load and schema acquisition on the other—while maintaining the epistemic standards of physics as both inquiry and formal system. Teacher orchestration is crucial in transforming affordance into learning: lateral reading prompts and explicit AI literacy strategies assist students in assessing generated claims against reliable sources and empirical evidence, thereby reducing the risks of plausible yet erroneous outputs (Wineburg & McGrew, 2017; Zhao, 2023; Holmes et al., 2015). In inclusive classrooms, integrating ChatGPT's adaptable language with DeepSeek's consistent formulations can enhance involvement while maintaining conceptual alignment with curriculum objectives.

Recent evidence on the energy literacy of pre-service primary teachers highlights the ongoing need for such targeted preparation, particularly in science and environmental education (Stylos et al., 2023), underscoring the potential of AI tools to support both conceptual understanding and sustainable teaching practices.

Two advisory observations emerge from the affordance study. Initially, ChatGPT's dialogic flexibility, although productive, may meander without clear job limitations; educators ought to control prompts by delineating roles, procedures, or success metrics. Secondly, DeepSeek's proficiency in formal clarity may promote answer acquisition at the cost of comprehension if students are not consistently mandated to rationalize their procedures, examine boundary situations, or convert across representations. In both instances, the affordances are pedagogically effective only if classes are structured to utilize them for formative objectives, rather than to replace experimental practice, representational fluency, or instructor discretion.

Literature on Classroom Applications

The incorporation of AI systems like ChatGPT and DeepSeek into educational practices has produced an expanding corpus of studies examining their capacity to improve classroom instruction and learning outcomes. Recent studies emphasize that these technologies function as adaptable educational aides, offering prompt feedback, supporting inquiry, and replicating genuine scientific dialogue. AI dialogue systems have demonstrated the ability to enhance metacognitive involvement by prompting students to express their reasoning processes and confront misconceptions, which is fundamental to good science education (Holmes et al., 2022). Comparative analyses of AI-assisted and conventional instruction indicate that students gain advantages in both information acquisition and higher-order thinking skills (Ouyang et al., 2022; Kotsis, 2024a).

Teacher professional development has become a pivotal focus in this literature. The effective implementation of AI in educational settings relies on educators' trust and ability to integrate these tools into their teaching practices. Research emphasizes that teacher training should extend beyond mere technical proficiency with AI platforms, prioritizing the development of pedagogical content knowledge that integrates AI capabilities with curriculum objectives (Alam, 2023; Kotsis, 2024b). Evidence from Greek pre-service primary teachers underscores this need, revealing persistent gaps in self-efficacy for teaching physics that well-designed AI-supported training could help address (Stylos et al., 2022). Professional learning communities and specialized workshops have been recognized as useful methods to enhance teacher preparedness, especially when artificial intelligence is positioned as a co-instructor rather than a substitute for pedagogical authority (Zawacki-Richter et al., 2019).

In the scientific domain, AI-supported virtual laboratories and simulation environments signify a notable advancement. AI-enabled platforms enable students to design experiments, manipulate variables, and view simulated outcomes, which is particularly beneficial in schools with restricted access to physical laboratory resources. Recent research has demonstrated that ChatGPT can directly aid educators by producing organized experiment worksheets for classroom use (Kotsis, 2024b). Such environments have demonstrated the capacity to enhance conceptual comprehension and experimental proficiency, while simultaneously alleviating cognitive stress via adaptive scaffolding (Yu et al., 2022). DeepSeek’s generative reasoning abilities can assist students methodically in hypothesis testing and error analysis, while ChatGPT can offer explanations and analogies that render abstract concepts more concrete. Recent work provides concrete examples of classroom-ready lesson plans that operationalize these capabilities, demonstrating how AI tools can be embedded in everyday physics instruction to support inquiry and problem solving (Vakarou et al., 2024).

The literature indicates the utilization of AI in examination preparation and formative evaluation. Research indicates that AI tutors can create practice problems, provide feedback

on written answers, and adjust difficulty levels according to student performance, thereby facilitating personalized learning and fair access to preparation resources (Kasneci et al., 2023). Educators can utilize these tools to enhance test preparation and to create alternative assessment methods that evaluate creativity, reasoning, and problem-solving skills, thereby expanding the definition of achievement in science education.

Ultimately, inclusion has been a prevalent subject in conversations regarding classroom AI. AI-driven tools can provide tailored training for pupils with varying linguistic, cognitive, and socio-emotional requirements. The multilingual capabilities of big language models facilitate communication for immigrant or refugee students, while adaptive prompts support engagement for pupils with learning challenges (Smutny & Schreiberova, 2020). Furthermore, AI tutors can offer accessible explanations through many modalities, including text-to-speech and simplified summaries, ensuring that learners with visual or hearing impairments are included in collaborative classroom discussions.

The literature indicates that the educational potential of ChatGPT and DeepSeek resides not just in their technological sophistication but also in their capacity to facilitate inclusive, inquiry-driven, and adaptive learning environments. Effective application relies on meticulously crafted implementation strategies that synchronize technical capabilities with the principles of equitable and meaningful education.

Pedagogical and Ethical Implications

The use of large language models like ChatGPT and DeepSeek in science and physics teaching presents substantial pedagogical advantages and urgent ethical challenges. From an educational standpoint, these tools can democratize access to sophisticated problem-solving techniques and individualized explanations. Students who typically find complex physics ideas challenging can now engage with AI for customized feedback, iterative questioning, and scaffolding that adjusts to their cognitive abilities (Zawacki-Richter et al., 2019). This affordance may facilitate a transition to constructivist learning environments, wherein learners collaboratively generate knowledge with AI serving as a facilitator rather than only an information supplier.

This educational potential is intertwined with ethical dilemmas, especially with equity, racism, and academic honesty. Despite ChatGPT's notable conversational fluency, apprehensions persist about factual mistakes and "hallucinations" in its responses, potentially misleading students in scenarios like virtual laboratories or test preparation (Kasneci et al., 2023). DeepSeek, designed with an emphasis on open-source openness, presents a divergent approach that prioritizes collaborative knowledge creation, yet remains susceptible to the dissemination of systemic biases inherent in its training data. These concerns underscore the ethical obligation for educators to present AI not as an infallible authority but as an imperfect partner whose results require rigorous examination.

A further ethical aspect pertains to inequalities in access. Although both ChatGPT and DeepSeek can facilitate personalized tutoring, disparities in access to digital infrastructure may exacerbate educational inequalities between affluent and underprivileged schools (Holmes et al., 2022). This necessitates a meticulous equilibrium between fostering AI-driven innovation and preventing the exacerbation of digital disparities.

Furthermore, the issue of authorship and originality in student work presents a significant ethical dilemma. The simplicity of incorporating AI-generated material into tasks obscures the distinction between genuine student learning and algorithmic assistance (Cotton et al., 2023). Consequently, educators must not only govern AI utilization but also foster novel paradigms of academic integrity, wherein transparency regarding AI participation is included in evaluation systems. This reconfiguration possesses instructional significance: by prompting students to reveal and contemplate their AI usage, educators can convert potential threats into possibilities for the advancement of critical digital literacy.

The ethical framework of AI in educational settings intersects with professional identity and teacher autonomy. Educators may experience pressure to implement AI tools despite insufficient professional development or institutional directives. This contradiction necessitates astute pedagogical leadership that honors teachers' professional discretion while providing them with training to ethically and effectively handle AI (Lim et al., 2023).

The educational and ethical ramifications of ChatGPT and DeepSeek are interconnected. Their ability to improve individualized learning, diversity, and engagement must be evaluated against the risks of misinformation, injustice, and the diminishment of authorship. Consequently, the incorporation of AI in physics education must be approached from two perspectives: as a pedagogical opportunity for innovation and as an ethical obligation to ensure fairness, trust, and authenticity in educational settings.

Comparative Strengths and Limitations

The comparative comparison of ChatGPT and DeepSeek within the realm of physics education underscores both their potential benefits and limitations. Although both products provide significant advantages for facilitating learning, their design philosophies and fundamental functionalities diverge in ways that influence their success in the classroom.

The principal strength of ChatGPT resides in its conversational fluency and adaptability to various educational environments. Its capacity to maintain prolonged dialogue with students, address clarifying inquiries, and provide explanations at various levels of complexity renders it especially appropriate for physics classrooms, where conceptual comprehension frequently necessitates iterative discourse (Kasneci et al., 2023; Rudolph et al., 2023). Both educators and learners gain from its accessibility, as ChatGPT is extensively available across several platforms and incorporated into educational frameworks. Furthermore, its multilingual capabilities and user-friendliness establish it as an effective resource for international classrooms, particularly in environments where English is not the predominant medium of teaching (Holmes et al., 2022). Nonetheless, ChatGPT exhibits certain limitations. Its propensity to generate plausible yet scientifically erroneous statements—frequently referred to as “hallucinations”—constitutes a risk when used to teach physics content (Zhai, 2023). Moreover, the model's training architecture prioritizes general-purpose communication rather than specialized domain reasoning, thus constraining its ability to address complex or abstract physics problems (Dwivedi et al., 2023).

Conversely, DeepSeek seems to be refined for depth of thinking and technical precision. This distinction is particularly apparent in comparing analyses of how ChatGPT and DeepSeek address student mistakes in physics topics (Kotsis, 2025a). Preliminary findings indicate that it may thrive at structured problem-solving tasks, especially in mathematics and the computational facets of physics (Neha & Bhati, 2025). This establishes DeepSeek as a valuable resource for advanced learners necessitating intensive interaction with symbolic representations, mathematics, or sequential logical reasoning. Furthermore, its design philosophy prioritizes organized outputs, potentially diminishing uncertainty in intricate problem-solving scenarios. However, DeepSeek's relative novelty in the educational sector constrains the extent of empirical study about its application in classrooms, and its current implementation is relatively limited in comparison to ChatGPT (Wang & Kantarcioglu, 2025). These limits may hinder their implementation, especially in schools with inadequate technical infrastructure.

The strengths and weaknesses of both models indicate a complementary function in physics education, a viewpoint further highlighted by recent comparative studies of ChatGPT and DeepSeek in the realm of science education (Kotsis, 2025b). ChatGPT's linguistic proficiency and educational flexibility facilitate conceptual exploration and student involvement, but DeepSeek's analytical depth provides a more robust framework for complex problem-solving. Both exhibit inherent limitations: neither can entirely replace the

pedagogical acumen of educators, and both are susceptible to reinforcing biases present in their training datasets (Bender et al., 2021). Their efficacy is contingent upon structured utilization, educator facilitation, and incorporation into meticulously crafted pedagogical approaches.

Discussion

The future of AI integration in physics education depends on the amalgamation of sophisticated language models with educationally sound design. ChatGPT and DeepSeek exemplify the nascent phase of AI-enhanced educational technologies, with their enduring efficacy reliant on methodical evaluation, collaborative design with educators, and continuous improvement. Although existing applications show potential in tutoring, assessment assistance, and conceptual clarification, empirical data from genuine classroom experiments are limited. In the absence of such validation, it is challenging to determine if the perceived affordances of these models can be reliably converted into quantifiable learning improvements (Zawacki-Richter et al., 2019; Holmes et al., 2019).

A primary research focus is the collaborative construction of AI systems alongside educators. Educators are particularly equipped to integrate AI capabilities with curriculum goals, support critical thinking, and ensure compatibility with student growth stages. Research in educational technology indicates that tools developed in partnership with practitioners are more likely to promote uptake and pedagogical significance (Luckin, 2017; Roschelle et al., 2020). In the realm of physics, co-design may encompass the incorporation of AI into laboratory modules, the creation of context-sensitive problem-solving activities, and the integration of AI into inquiry-based learning frameworks.

A critical focus for future research is the creation of hybrid models that integrate the advantages of big language models with specialized simulations. The conversational fluency of ChatGPT and the technical reasoning capabilities of DeepSeek could be synergistically combined with physics engines, interactive simulations, or adaptive learning platforms. Hybrid models may offer students both explanations and the chance to test theories in dynamic virtual environments (Kozma, 2003; Yu et al., 2022).

The ethical and governance aspects will influence future trajectories. As these tools are integrated into educational systems, the issues of transparency, accountability, and algorithmic bias necessitate meticulous supervision. Recent research indicates that forthcoming AI in education should incorporate inherent methods for explainability and accountability to preserve confidence within the classroom environment (Williamson & Eynon, 2020; Holmes & Porayska-Pomsta, 2023).

The long-term goal for AI in physics education necessitates reimagining its incorporation into the curriculum, not as an ancillary component, but as an essential resource for fostering scientific reasoning and digital literacy. This necessitates multi-national comparative research, ongoing longitudinal investigations, and policy frameworks that promote fair access. The prospects of the discipline depend on the technical sophistication of ChatGPT and DeepSeek, as well as their educational organization and institutional adoption (Holmes et al., 2023).

Conclusion

The use of artificial intelligence tools like ChatGPT and DeepSeek in physics teaching presents a significant opportunity as well as a formidable obstacle. This paper examines their classroom affordances, applicability in various learning environments, ethical and pedagogical implications, as well as their strengths and limits. A depiction of transformative potential arises, moderated by the necessity for critical reflection and continuous empirical assessment.

The accessibility, conversational fluency, and swift adoption of ChatGPT yield immediate advantages for physics educators and learners, especially in areas such as fostering inquiry, assisting multilingual students, and providing instant feedback on problem-solving

methodologies. The democratization of access to advanced language models renders it a broadly accessible gateway to AI-enhanced learning. In contrast, DeepSeek's technical and reasoning-oriented features indicate potential for content-rich and sophisticated learning environments, especially in tackling intricate physics ideas that require methodical reasoning. Collectively, these tools underscore the potential for synergistic applications, with ChatGPT facilitating dialogic learning and DeepSeek augmenting analytical rigor (Kasneci et al., 2023).

However, the constraints are equally significant. Both models encounter difficulties with precision, fabrication, and contextual awareness. Their utilization must be facilitated by adequately qualified educators who are cognizant of AI's advantages and trained to identify its limitations, so as to guide students appropriately. Furthermore, ethical considerations like equitable access, cultural prejudice, and data privacy must be fundamental to any adoption plan. Failing to address these issues, AI may intensify existing disparities instead of mitigating them.

The future of AI in physics education will hinge on the collaboration between researchers and educators in co-designing classroom interventions, ensuring new tools enhance genuine scientific learning rather than supplanting human pedagogical discernment. Hybrid models integrating natural language interaction, multimodal functionalities, and physics-oriented reasoning engines may characterize the forthcoming generation of instructional AI. This vision necessitates comprehensive empirical research across varied educational systems and learner demographics, along with legislative frameworks that ensure ethical execution.

In conclusion, ChatGPT and DeepSeek should not be regarded as substitutes for the human aspects of teaching and learning, but rather as advancing tools that, when judiciously used, can enhance the physics classroom. Their potential extends beyond merely automating responses or producing explanations; it enhances the educator's capacity to foster inquiry, creativity, and critical thinking. A judicious adoption, guided by pedagogical theory, ethical considerations, and ongoing research, will be crucial for the responsible utilization of AI in physics education.

References

Ainsworth, S. (2006). DeFT: A conceptual framework for considering learning with multiple representations. *Learning and Instruction, 16*(3), 183–198. https://doi.org/10.1016/j.learninstruc.2006.03.001

Alam, A. (2023). Harnessing the Power of AI to Create Intelligent Tutoring Systems for Enhanced Classroom Experience and Improved Learning Outcomes. In: Rajakumar, G., Du, K.L., Rocha, Á. (eds) Intelligent Communication Technologies and Virtual Mobile Networks. ICICV 2023. Lecture Notes on Data Engineering and Communications Technologies, vol 171. Springer, Singapore. https://doi.org/10.1007/978-981-99-1767-9_42

Bender, E. M., Gebru, T., McMillan-Major, A., & Shmitchell, S. (2021). On the dangers of stochastic parrots: Can language models be too big? *Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency*, 610–623. https://doi.org/10.1145/3442188.3445922

Chi, M. T. H., & Wylie, R. (2014). The ICAP framework: Linking cognitive engagement to active learning outcomes. *Educational Psychologist, 49*(4), 219–243. https://doi.org/10.1080/00461520.2014.965823

Cotton, D. R. E., Cotton, P. A., & Shipway, J. R. (2023). Chatting and cheating: Ensuring academic integrity in the era of ChatGPT. *Innovations in Education and Teaching International, 60*(5), 1–12. https://doi.org/10.1080/14703297.2023.2190148

Crompton, H., & Burke, D. (2023). Artificial intelligence in higher education: The state of the field. *International Journal of Educational Technology in Higher Education*, *20*(1), 1-22. https://doi.org/10.1186/s41239-023-00392-8

Ding, L., Li, T., Jiang, S., & Gapud, A. (2023). Students' perceptions of using ChatGPT in a physics class as a virtual tutor. *International Journal of Educational Technology in Higher Education, 20*(1), 1–18. https://doi.org/10.1186/s41239-023-00434-1

diSessa, A. A. (1993). Toward an Epistemology of Physics. *Cognition and Instruction*, *10*(2–3), 105–225. https://doi.org/10.1080/07370008.1985.9649008

Duit, R.H., & Treagust, D.F. (2012). Conceptual Change: Still a Powerful Framework for Improving the Practice of Science Instruction. In: Tan, K., Kim, M. (eds*) Issues and Challenges in Science Education Research, Moving forward* (pp. 43-54). Springer, Dordrecht. https://doi.org/10.1007/978-94-007-3980-2_4

Dwivedi, Y. K., Kshetri, N., Hughes, L., Slade, E. L., Jeyaraj, A., Kar, A. K., Baabdullah, A. M., Koohang, A., Raghavan, V., Ahuja, M., Albanna, H., Albashrawi, M. A., Al-Busaidi, A. S., Balakrishnan, J., Barlette, Y., Basu, S., Bose, I., Brooks, L., Buhalis, D., . . . Wright, R. (2023). Opinion Paper: "So what if ChatGPT wrote it?" Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. *International Journal of Information Management*, *71*, 102642. https://doi.org/10.1016/j.ijinfomgt.2023.102642

Eden, C. A., Adeleye, O. O., & Adeniyi, I. S. (2024). A review of AI-driven pedagogical strategies for equitable access to science education. *Magna Scientia Advanced Research and Reviews, 10*(2), 044–054. https://doi.org/10.30574/msarr.2024.10.2.0043

Graesser, A. C., Chipman, B., Haynes, B. C., & Olney, A. (2005). AutoTutor: An intelligent tutoring system with mixed-initiative dialogue. *IEEE Transactions on Education, 48*(4), 612–618. https://doi.org/10.1109/TE.2005.856149

Holmes, N. G., Wieman, C. E., & Bonn, D. A. (2015). Teaching critical thinking. *Proceedings of the National Academy of Sciences, 112*(36), 11199–11204. https://doi.org/10.1073/pnas.1505329112

Holmes, W., & Porayska-Pomsta, K. (2023). The ethics of artificial intelligence in education. London: Routledge.

Holmes, W., Bialik, M., & Fadel, C. (2019). *Artificial intelligence in education promises and implications for teaching and learning*. Center for Curriculum Redesign.

Holmes, W., Persson, J., Chounta, I. A., Wasson, B., & Dimitrova, V. (2023). *Artificial intelligence and education: A critical view through the lens of learning science*. Council of Europe.

Holmes, W., Porayska-Pomsta, K., Holstein, K., Sutherland, E., Baker, T., Shum, S. B., ... & Koedinger, K. R. (2022). Ethics of AI in education: Towards a community-wide framework. *International Journal of Artificial Intelligence in Education*, *32*(3), 504–526. https://doi.org/10.1007/s40593-021-00239-1

Kasneci, E., Sessler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., Gasser, U., Groh, G., Günnemann, S., Hüllermeier, E., Krusche, S., Kutyniok, G., Michaeli, T., Nerdel, C., Pfeffer, J., Poquet, O., Sailer, M., Schmidt, A., Seidel, T., . . . Kasneci, G. (2023). ChatGPT for good? On Opportunities and Challenges of Large Language Models for Education. *Learning and Individual Differences*, *103*, 102274. https://doi.org/10.1016/j.lindif.2023.102274

Kotsis, K. T., Stylos, G., Houssou, P., & Kamaratos, M. (2023). *Students' Perceptions of the Heat and Temperature Concepts: A Comparative Study between Primary, Secondary, and University Levels. European Journal of Education and Pedagogy, 4(1),* 136–144. https://doi.org/10.24018/ejedu.2023.4.1.577

Kotsis, K. T. (2024a). Integrating ChatGPT into the Inquiry-Based Science Curriculum for Primary Education. European Journal of Education and Pedagogy, 5(6), 28–34. https://doi.org/10.24018/ejedu.2024.5.6.891

Kotsis, K. T. (2024b). ChatGPT Develops Physics Experiment Worksheets for Primary Education Teachers. European Journal of Education Studies, 11(5). 1-20. http://dx.doi.org/10.46827/ejes.v11i5.5274

Kotsis, K. T. (2025a). Comparing ChatGPT and DeepSeek in Addressing Misconceptions about Physics Concepts. European Journal of Contemporary Education and E-Learning, 3(2), 191-206. https://doi.org/10.59324/ejceel.2025.3(2).17

Kotsis, K. T. (2025b). ChatGPT and DeepSeek Evaluate One Another for Science Education. EIKI Journal of Effective Teaching Methods, 3(1), 98-102. https://doi.org/10.59652/jetm.v3i1.439

Kozma, R. B. (2003). The material features of multiple representations and their cognitive and social affordances for science understanding. *Learning and Instruction, 13*(2), 205–226. https://doi.org/10.1016/S0959-4752(02)00021-X

Lim, W. M., Gunasekara, A., Pallant, J. L., Pallant, J. I., & Pechenkina, E. (2023). Generative AI and the future of education: Ragnarök or reformation? A paradoxical perspective from management educators. *The International Journal of Management Education*, *21*(2), 100790. https://doi.org/10.1016/j.ijme.2023.100790

Luckin, R. (2017). Towards artificial intelligence-based assessment systems. *Nature Human Behaviour*, *1*(3), 1-3. https://doi.org/10.1038/s41562-016-0028

Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B. (2016). *Intelligence Unleashed: An Argument for AI in Education*. Pearson Education. https://discovery.ucl.ac.uk/id/eprint/1475756

Nam, B. H., & Bai, Q. (2023). ChatGPT and its ethical implications for STEM research and higher education: A media discourse analysis. *International Journal of STEM Education*, *10*(1), 1–24. https://doi.org/10.1186/s40594-023-00452-5

Neha, F., & Bhati, D. (2025). DeepSeek Models in STEM Education: Capabilities, Applications, and Challenges. *TechRxiv. Authorea Preprints*. https://doi.org/10.36227/techrxiv.174198447.71647707/v1

Ouyang, F., Zheng, L., & Jiao, P. (2022). Artificial intelligence in online higher education: A systematic review of empirical research from 2011 to 2020. *Education and Information Technologies*, *27*(6), 7893–7925. https://doi.org/10.1007/s10639-022-10925-9

Roll, I., & Wylie, R. (2016). Evolution and Revolution in Artificial Intelligence in Education. *International Journal of Artificial Intelligence in Education, 26*(2), 582–599. https://doi.org/10.1007/s40593-016-0110-3

Roschelle, J., Martin, W., Ahn, J., & Schank, P. (2017). *Cyberlearning community report: The state of cyberlearning and the future of learning with technology*. SRI International. http://hdl.handle.net/20.500.12265/3

Rudolph, J., Tan, S., & Tan, S. (2023). ChatGPT in education: Applications and challenges. *Education and Information Technologies, 28*(5), 7669–7687. Menlo Park, CA: SRI International. https://doi.org/10.1007/s10639-023-11610-8

Smutny, P., & Schreiberova, P. (2020). Chatbots for learning: A review of educational chatbots for the Facebook Messenger platform. *Computers and Education, 151*, 103862. https://doi.org/10.1016/j.compedu.2020.103862

Stylos, G., & Kotsis, K. T. (2021). *Use of a Simple Homemade Apparatus to Teach Basic Thermal Concepts – Six Qualitative Demonstrations/Experiments. The Physics Teacher, 59,* 477–479. https://doi.org/10.1119/10.0006134

Stylos, G., Kamtsios, S., & Kotsis, K. T. (2022). Assessment of Greek pre-service primary teachers' efficacy beliefs in physics teaching. Journal of Science Teacher Education, 34(1), 44–62. https://doi.org/10.1080/1046560X.2021.2023959

Stylos, G., Gavrilakis, C., Goulgouti, A., & Kotsis, K. T. (2023). *Investigating energy literacy of pre-service primary school teachers in Greece. Interdisciplinary Journal of Environmental and Science Education, 19(4),* e2318. https://doi.org/10.29333/ijese/13725

Sweller, J., Ayres, P., & Kalyuga, S. (2011). *Cognitive load theory*. Springer. https://doi.org/10.1007/978-1-4419-8126-4

Vakarou, G., Stylos, G., & Kotsis, K. T. (2024). AI for enhancing physics education: Practical tools and lesson plans. *The International Journal of Science, Mathematics and Technology Learning, 31(2),* 159–176. https://doi.org/10.18848/2327-7971/CGP/v31i02/159-176

VanLehn, K. (2011). The relative effectiveness of human tutoring, intelligent tutoring systems, and other tutoring systems. *Educational Psychologist, 46*(4), 197–221. https://doi.org/10.1080/00461520.2011.611369

Wang, C., & Kantarcioglu, M. (2025). A Review of DeepSeek Models' Key Innovative Techniques. *ArXiv*. https://doi.org/10.48550/arXiv.2503.11486

Williamson, B., & Eynon, R. (2020). Historical threads, missing links, and future directions in AI in education. *Learning, Media and Technology, 45*(3), 223–235. https://doi.org/10.1080/17439884.2020.1798995

Wineburg, S., & McGrew, S. (2017). Lateral reading and the nature of expertise: Reading less and learning more when evaluating digital information. *Teachers College Record, 119*(13), 1–40. https://doi.org/10.2139/ssrn.3048994

Yu, J., Denham, A. R., & Searight, E. (2022). A systematic review of augmented reality game-based Learning in STEM education. *Educational technology research and development*, *70*(4), 1169–1194. https://doi.org/10.1007/s11423-022-10122-y

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education – Where are the educators? *International Journal of Educational Technology in Higher Education, 16*(1), 39. https://doi.org/10.1186/s41239-019-0171-0

Zhai, X. (2023). *ChatGPT user experience: Implications for education*. SSRN. 1–18. https://doi.org/10.2139/ssrn.4312418

Zhao, T. (2023). AI in Educational Technology. *Preprints*. https://doi.org/10.20944/preprints202311.0106.v1

Students' Stories as a Means of Enhancing Parental Involvement in School

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Abstract

This article investigates the role of student narratives as a means to enhance parental involvement in schools, focusing specifically on conflict resolution with teenagers. Drawing on a seminar organized at a local Parents' School, the study engaged parents in an online workshop in which they worked with real, anonymized narratives from students describing conflict situations at home. These narratives were used as practical tools that enabled parents to apply conflict resolution theories and strategies collaboratively, striving for a deeper understanding of adolescent perspectives. The article includes empirical findings based on a thematic analysis of parents' reflections and group discussions during the seminar, identifying key themes such as empathy, boundary-setting, communication, collaborative problem solving, and emotional self-regulation. By bridging theory and practice through both narrative pedagogy and empirical data, the study demonstrates the transformative impact of student stories on parent-teacher relationships and provides insights for future parental education initiatives.

Key words: parental involvement; narrative pedagogy; parents' school

Introduction

Parental involvement in a child's education has long been recognized as a significant factor contributing to academic success and personal development. Decades of research have demonstrated that when parents are actively engaged in their children's school life, the results can include higher academic achievement, better social skills, and improved emotional well-being (Epstein, 2011; Fan & Chen, 2001). However, engaging parents of adolescents presents unique challenges. During adolescence, as children seek more independence and autonomy, parents may struggle to find effective ways to remain involved without seeming intrusive or controlling (Hill & Tyson, 2009). This period often leads to increased conflict between parents and their children as they navigate shifting boundaries and developmental changes.

The teenage years, marked by cognitive, emotional, and social transformations, frequently bring heightened tensions between parents and children. Conflicts during this phase are common, particularly around issues such as autonomy, responsibilities, peer relationships, and academic performance (Smetana, 2011). While these conflicts are a normal part of adolescence, the way they are handled can significantly impact the parent-child relationship. Poorly managed conflicts can lead to emotional distance, strained communication, and even mental health issues for both parents and adolescents (Laursen & Collins, 2009). Conversely, constructive conflict resolution has been shown to promote healthier family dynamics, better emotional regulation, and increased adolescent resilience (Laursen & Hafen, 2010).

Parental education programs have increasingly focused on helping parents develop strategies for effective conflict resolution, empathetic communication, and maintaining supportive involvement during adolescence. However, many of these programs fail to fully engage parents, especially when it comes to understanding the unique perspectives and emotional experiences of their adolescent children. One innovative approach to bridging this gap is the use of students' stories or narratives. By incorporating real-life narratives of adolescent experiences, educators can provide parents with a deeper understanding of their children's inner worlds, particularly regarding conflicts that arise at home. This method allows

parents to "step into the shoes" of their teens, fostering empathy and improving their ability to manage conflicts constructively (Bruner, 1991).

The use of narratives in education, known as narrative pedagogy, has been shown to enhance learning by connecting theoretical concepts with lived experiences (Clandinin & Connelly, 2000). In the context of parental education, this approach holds particular promise. Adolescents' stories of conflict with their parents offer a window into the emotional and psychological realities of teenage life, allowing parents to reflect on their own behaviors and attitudes. Through this process, parents are better equipped to apply conflict resolution strategies and empathize with their children's struggles, leading to improved communication and stronger relationships (Green et al., 2006).

The current study aims to contribute to the growing body of research on parental involvement during adolescence by exploring how narrative pedagogy can be applied to improve parental conflict management strategies. The article will review the theoretical foundations of parental involvement, the nature of parent-adolescent conflict, and the potential for narrative-based interventions to foster empathy and behavioral change. Following the theoretical discussion, the empirical section will describe the methodology and outcomes of the seminar, highlighting how the use of student narratives impacted parents' approaches to conflicts with their adolescents. Through this study, we seek to offer practical insights into how schools and educators can engage parents in meaningful ways that enhance family relationships and support adolescent development.

The purpose of this study is twofold. First, it seeks to examine the effectiveness of using student narratives as a pedagogical tool in parental education programs, particularly in addressing parent-adolescent conflicts. Second, it aims to explore how parents can apply theoretical frameworks of conflict resolution in practical settings when provided with real-life examples from their children's perspective. By presenting these findings, the article contributes to the ongoing discourse on how schools can foster meaningful parental involvement during the challenging adolescent years, promoting stronger parent-child relationships and improving adolescent well-being.

Theoretical framework

Parental involvement in education and adolescent development

Parental involvement in education is widely regarded as a critical determinant of a child's academic success, motivation, and social development. Historically, much of the research in this area has focused on younger children, with findings demonstrating that engaged parents lead to better academic outcomes, higher self-esteem, and lower dropout rates (Fan & Chen, 2001). However, as children enter adolescence, parental involvement tends to decrease as the child strives for autonomy and independence (Hill & Tyson, 2009). This decline in involvement is particularly concerning as adolescence is a crucial developmental stage marked by heightened social pressures, emotional volatility, and significant cognitive changes.

Recent studies emphasize the importance of maintaining a positive parental presence during adolescence, even if the nature of this involvement changes (Grolnick & Pomerantz, 2009). Parents of adolescents need to shift from being directive to supportive, offering guidance without being overly controlling. This "autonomy-supportive" form of parental engagement has been shown to foster better emotional regulation in adolescents, greater academic motivation, and healthier identity formation (Soenens & Vansteenkiste, 2010).

Adolescence is also characterized by more frequent conflicts between parents and children, primarily due to the developmental task of individuation. As teenagers seek to establish their identity and independence, disagreements around issues such as privacy, academic responsibilities, social relationships, and household rules intensify (Smetana, 2011). While conflict is a normal part of this developmental phase, how parents handle these conflicts can either enhance or undermine their relationship with their teen (Laursen & Collins, 2009).

Research on conflict resolution in the family context suggests that parents who engage in collaborative problem-solving, validate their adolescent's perspective, and avoid authoritarian approaches tend to foster better outcomes, including improved communication and a more secure parent-child relationship (Van Doorn et al., 2011). Conversely, highly controlling or disengaged parenting styles can exacerbate conflicts, leading to emotional estrangement and even academic or behavioral issues (Steinberg, 2001).

The nature of parent-adolescent conflict

Conflicts between parents and adolescents are inevitable and developmentally appropriate as young people navigate their growing need for autonomy. According to Erikson's stages of psychosocial development, adolescence is marked by the conflict between identity and role confusion, where teenagers seek to explore and assert their personal values, beliefs, and identities (Erikson, 1968). This process often involves pushing against parental boundaries, leading to disagreements, particularly over issues related to freedom, social interactions, and personal responsibilities (Smetana et al., 2006).

Research distinguishes between constructive and destructive conflicts. Constructive conflicts, where both parties express their feelings and work toward mutual understanding, tend to lead to better emotional outcomes for adolescents and healthier family dynamics (Laursen & Hafen, 2010). On the other hand, destructive conflicts, characterized by hostility, withdrawal, and escalated tension, can have long-term negative effects, including increased adolescent anxiety, depression, and reduced academic performance (Smetana et al., 2006). Parents who engage in active listening, validate their children's feelings, and approach conflicts with an open mindset help adolescents develop emotional regulation and negotiation skills (Collins & Laursen, 2004).

Theories of conflict resolution, such as Thomas-Kilmann's conflict mode instrument, which identifies five conflict-handling styles (competing, collaborating, compromising, avoiding, and accommodating), have been applied to parent-adolescent interactions. Parents who adopt collaborative approaches—working with their adolescent to find mutually satisfying solutions—tend to have better long-term relationships with their children (Kilmann & Thomas, 1977). This collaboration aligns with principles of democratic parenting, which emphasizes shared decision-making and respect for the adolescent's growing autonomy (Baumrind, 1978).

Role of empathy and perspective-taking in conflict resolution

Empathy and perspective-taking are central to resolving conflicts and fostering deeper relationships between parents and adolescents. Empathy, defined as the ability to understand and share another person's feelings, is essential in bridging the communication gap that often arises in parent-teen interactions (Davis, 1983). Adolescents, with their developing cognitive abilities, are increasingly able to understand multiple perspectives, but they also face emotional turbulence, making it difficult to manage their feelings during conflicts (Kuhn, 2009).

From the parental side, empathy involves stepping into the adolescent's shoes to understand their point of view, particularly in conflict situations. Parents who demonstrate empathy during conflicts are more likely to de-escalate tension and create an environment where their adolescent feels heard and respected (Eisenberg & Valiente, 2004). Studies show that when parents make an effort to understand their children's perspectives, adolescents are more likely to reciprocate, leading to more effective conflict resolution and improved relationship satisfaction (Gottman, 1997).

Additionally, research on perspective-taking suggests that when parents practice this cognitive skill—actively considering their child's viewpoint—they are more likely to engage in behaviors that promote positive developmental outcomes. Perspective-taking enhances parents' ability to navigate conflicts in a way that balances guidance with respect for their

child's autonomy (Galinsky, 2002). Programs that teach parents empathy and perspective-taking have demonstrated success in reducing family conflict and improving adolescent well-being (Sillars et al., 2004).

Narrative Pedagogy: Enhancing learning through stories

Narrative pedagogy, or the use of storytelling as a teaching method, has gained traction in educational and psychological research due to its effectiveness in fostering reflection, emotional engagement, and practical application of knowledge. Stories serve as powerful tools for making abstract concepts more concrete and relatable, allowing individuals to internalize theoretical ideas through lived experiences (Bruner, 1991). In the context of parental education, using real or simulated narratives of adolescent experiences can provide a unique window into the inner world of teenagers, helping parents understand the emotional and psychological complexities their children navigate daily (Clandinin & Connelly, 2000).

The concept of narrative learning is grounded in constructivist theories of education, which suggest that individuals learn best when they can relate new information to their own experiences and emotions (Vygotsky, 1978). Stories tap into this cognitive-emotional nexus, allowing parents to see their child's struggles in a new light, which can be particularly valuable in addressing conflictual or strained relationships (Diekelmann, 2001).

Narratives also play a role in fostering critical reflection. According to Mezirow's theory of transformative learning, stories can lead to a "disorienting dilemma" where individuals are forced to confront their assumptions and re-evaluate their responses to situations (Mezirow, 1997). In the context of parent-adolescent conflicts, reading students' narratives can trigger such dilemmas for parents, pushing them to reconsider their parenting approaches and develop new, more empathetic strategies.

Students' stories as tools for parental reflection and behavioral change

Using students' narratives to foster empathy and reflective learning in parents is an innovative approach to parental education. Stories are inherently engaging and emotionally resonant, which can help parents connect with the material in a more meaningful way than abstract theoretical instruction alone. When parents read or hear the authentic voices of adolescents describing their struggles with parental conflict, they are more likely to experience empathy and reflect on their own behaviors (Green et al., 2006). This experiential learning process is particularly powerful when dealing with emotionally charged topics like conflict and autonomy.

Empirical research supports the idea that narratives can be transformative in educational settings. A study by Green and Brock (2000) on the "transportation" effect of narratives—where readers become mentally absorbed in a story—demonstrated that individuals who engage deeply with stories are more likely to change their attitudes and behaviors in response. In the context of parent education, parents who are "transported" into the world of the adolescent through narratives are more likely to develop empathy and reconsider their conflict management strategies (Mar et al., 2006).

Moreover, incorporating narratives into educational workshops allows for a balance between theory and practice. While theoretical models of adolescent development and conflict resolution provide parents with valuable frameworks, narratives bring these theories to life by illustrating the real-world challenges that teenagers face (Diekelmann, 2001). For instance, a parent's understanding of autonomy-supportive parenting may be enhanced when they read a story of a student who struggles with feelings of control and rebellion due to parental overreach. By examining the narrative through the lens of theory, parents can more effectively apply the concepts to their own interactions with their children (Smetana et al., 2006).

The transformative potential of narratives also aligns with contemporary psychological theories on emotional intelligence and social cognition. Stories activate areas of the brain

involved in social processing, which helps parents better understand and respond to their adolescent's emotions (Mar et al., 2006). Additionally, engaging with narratives can promote self-reflection, leading parents to recognize the emotional triggers and behavioral patterns that contribute to conflict escalation (Eisenberg & Valiente, 2004).

Utilizing students' stories for parental engagement in conflict resolution

In order to create a meaningful experience for parents in learning conflict resolution strategies, the seminar I organized at the local Parents' School was designed as an interactive, online workshop, aiming to bridge theoretical knowledge with practical application through the power of storytelling. This seminar, titled "Conflict Resolution with Teenagers through Students' Narratives," centered on helping parents engage with real-life conflict scenarios as narrated by teenagers themselves, ultimately enhancing their involvement in school life and their understanding of adolescent perspectives.

The seminar commenced with an introductory presentation that outlined key theoretical concepts in conflict resolution, tailored specifically for conflicts that arise between teenagers and parents. Drawing on established models, I introduced fundamental strategies such as active listening, empathy, perspective-taking, and collaborative problem-solving. The theoretical portion also covered common triggers in adolescent-parent conflicts—such as issues of autonomy, trust, and communication barriers—and highlighted how adolescents often perceive these conflicts. This grounding helped frame parents' understanding of why conflict arises and how it may escalate if left unresolved or mishandled.

The presentation was interactive, allowing parents to ask questions and share brief anecdotes or struggles they faced in communicating with their children. This section was essential in establishing a shared language and reference point for the activities that followed, as parents began to recognize patterns and triggers in conflicts within their own families.

Following the theoretical segment, I introduced the main activity: the exploration of anonymized student narratives. These stories had been carefully selected to provide a diverse range of scenarios, each depicting a different type of conflict situation that teenagers commonly experience with their parents. The stories included instances of typical teenage defiance, communication breakdowns, and conflicts over boundaries, responsibilities, and trust. Each story was anonymized to ensure confidentiality, but retained a level of rawness and authenticity, which helped parents engage deeply and relate personally.

These narratives served as a bridge between theory and practice, offering parents a window into the real emotional landscapes and experiences of adolescents in conflict situations. The students' words allowed parents to see conflicts from their children's perspective, underscoring the importance of empathy and understanding as essential tools in conflict resolution.

To facilitate hands-on learning, parents were randomly split into small, diverse groups through the online platform's breakout room feature. Each group was assigned one of the students' narratives to work on, and their task was to apply the conflict resolution theories and strategies introduced earlier to analyze and propose solutions for the case at hand.

The groups were instructed to take a structured approach to their analysis. First, they identified the conflict dynamics by dissecting the conflict presented in their assigned story, examining triggers, misunderstandings, and key communication breakdowns from both the parent's and the teen's perspectives. This analysis helped them to pinpoint the underlying causes of tension. Next, the groups moved on to applying theoretical concepts by incorporating the strategies introduced in the theoretical portion of the seminar. Parents discussed possible approaches to addressing the conflict, suggesting tactics such as rephrasing communication to reduce defensiveness, expressing empathy to foster understanding, and setting boundaries with mutual respect. Finally, each group proposed a resolution strategy by crafting a specific, practical plan that the fictional parent could adopt to de-escalate or resolve the conflict. This plan included actionable components like specific phrases to encourage open

dialogue, approaches for validating the teenager's feelings, and techniques to re-establish trust and mutual respect between parent and teen.

To encourage collaboration and equal participation, each group was guided to appoint a facilitator who would ensure everyone contributed and that the group remained focused on the task.

After a designated period of group work, the participants reconvened in the main virtual room. Each group was then invited to present their analysis and resolution strategies. One by one, the groups shared their reflections on the conflict, their insights into the teenager's perspective, and the practical strategies they believed would foster constructive outcomes.

The presentation phase offered two key benefits for the participating parents. First, it provided diverse perspectives; by hearing the analyses and interpretations from other groups, parents were exposed to a variety of approaches and insights, broadening their understanding of conflict resolution possibilities. This exchange allowed them to see how others approached similar challenges, often providing fresh angles they might not have considered on their own. Second, the presentations facilitated collective learning; the group discussions sparked a dynamic and open conversation where parents could ask questions, propose alternative viewpoints, and gain new perspectives by learning from each other's experiences. This collaborative exchange fostered a supportive learning environment, allowing parents to deepen their insights and refine their conflict resolution strategies.

Following the presentations, the seminar shifted into an open discussion format, where parents could freely express their thoughts, ask questions, and reflect on the experience. This segment was designed to deepen parents' understanding by inviting them to relate what they had learned back to their personal lives and share any anticipated challenges in applying these strategies.

During this conversation, several parents voiced newfound realizations about their children's perspectives, acknowledging that they had rarely considered conflicts from their teens' points of view before this seminar. Others expressed appreciation for the structured approach to conflict resolution, noting how the process of discussing each step with peers had helped them clarify strategies that would be applicable in their own families.

Parents also candidly discussed the emotional challenges of putting theory into practice, particularly in the face of intense feelings or when they felt that they were constantly "walking on eggshells" around their teens. In response, I provided additional tips for remaining calm and focused during conflicts, as well as advice for balancing empathy with clear boundaries—a skill that many parents identified as a priority.

To close the seminar, I asked each parent to briefly share one key takeaway or commitment they planned to implement in their interactions with their teens. Many expressed intentions to listen more actively, pause before reacting defensively, or make a conscious effort to validate their children's feelings. This collective commitment was an encouraging note to end on, fostering a sense of solidarity and support among participants.

Research Design and Methodological Rigor

Research approach and design

This study employed a qualitative research design rooted in narrative pedagogy and thematic analysis to investigate the use of student narratives in enhancing parental involvement and conflict resolution with adolescents. Qualitative methodology was selected for its strength in exploring complex human experiences, particularly parental reflections and meaning-making processes elicited through interaction with authentic adolescent stories (Creswell & Poth, 2018; Riessman, 2008). The narrative approach facilitated a deep connection between theoretical concepts of conflict resolution and real-life application as experienced by participating parents (Riessman, 2008).

Participants and setting

Participants were parents enrolled in a local Parents' School seminar conducted online, aimed at improving conflict resolution skills through engagement with anonymized student narratives describing parent-teen conflicts. The participant group consisted of [number] parents representing a range of socio-demographic backgrounds within the local community. Recruitment was conducted through school outreach, ensuring voluntary participation by parents actively engaged in their child's education. Demographic details such as age range, gender distribution, and prior experience with parental education programs were collected to contextualize the findings (Patton, 2015).

Data collection procedures

Data were gathered during the seminar through multiple qualitative sources. These included audio recordings and transcripts of group discussions, parental reflections shared during and after breakout group activities, and written feedback submitted by participants. The seminar structure involved initial theoretical presentations on conflict resolution models, followed by interactive activities where parents applied these theories to selected anonymized student narratives. This interactive format was designed to prompt authentic reflections and collaborative problem-solving (Creswell & Poth, 2018; Patton, 2015).

Data analysis approach

Thematic analysis was employed to systematically examine parents' reflections and discussions, following a rigorous coding process. Initial open coding identified significant phrases and concepts related to empathy, communication, boundary-setting, collaboration, and emotional regulation. These codes were subsequently clustered into broader themes reflective of the collective parental experience (Braun & Clarke, 2006). To enhance coding reliability, multiple readings of transcripts were conducted, along with peer debriefing sessions to refine theme definitions and interpretation consistency (Lincoln & Guba, 1985).

Ethical Considerations and Safeguards

Ethical integrity was prioritized throughout the study. Student narratives used in the seminar were fully anonymized to protect confidentiality and privacy. Prior informed consent was obtained from all parent participants, who were informed about the study's aims, procedures, and their right to withdraw at any time without penalty. Data confidentiality was maintained through secure digital storage and anonymized reporting. The study was conducted in accordance with institutional ethical guidelines for educational research (Patton, 2015; Shenton, 2004).

Validity and Trustworthiness

Strategies to enhance validity included triangulation of data sources (group discussions, written reflections, facilitator observations) and member checking during the seminar, allowing participants to clarify and confirm interpretations (Lincoln & Guba, 1985; Shenton, 2004). Reflexivity was exercised by the researcher to acknowledge potential biases and maintain objectivity, with detailed documentation of analytic decisions and methodology transparency (Tracy, 2010). While the sample size and setting limit broad generalizability, the depth and richness of qualitative data provide meaningful insights into the processes and impact of narrative pedagogy in parental education (Creswell & Poth, 2018).

Empirical results – Thematic analysis of parental reflections

The seminar provided a rich array of data drawn from the parents' reflections and group discussions on conflict resolution with their teenagers. Using thematic analysis, I identified recurring patterns and organized parents' responses into a series of themes that captured the key elements of their experiences, insights, and challenges. This method involved transcribing

the parents' comments, coding them to highlight significant phrases, and clustering these codes to form meaningful categories. The emergent themes were derived from both the frequency and intensity of specific ideas expressed by parents, illuminating both shared and unique aspects of their reflections.

Theme 1: Empathy as a transformative tool

One of the most prominent themes to emerge was the newfound importance of empathy in parental approaches to conflict. Many parents expressed a shift in perspective after reading the students' narratives and reflected on how they could better understand their teenagers' emotions and viewpoints.

For instance, one parent stated, “Reading their [the teens’] stories made me realize that I sometimes forget they’re going through their own battles. I need to remember that they have their own pressures.” This and similar comments were categorized under Recognizing Teenagers’ Inner Struggles, later forming the broader theme Empathy as a Transformative Tool. The codes contributing to this theme included phrases like “putting myself in their shoes,” “seeing things from their side,” and “acknowledging their feelings before reacting.”

Another parent reflected, “I think I’ve been so focused on enforcing rules that I lost sight of trying to understand what my child is really going through.” This acknowledgment of an empathy gap—an insight shared by several participants—revealed the crucial role empathy plays in de-escalating conflicts and building trust. The empathy theme highlighted how parents began to recognize empathy not just as an abstract concept but as a practical tool to bridge communication gaps and reduce misunderstandings.

Theme 2: Balancing boundaries and flexibility

Another significant theme was the challenge of balancing firm boundaries with flexibility, especially in conflicts centered around autonomy and trust. Parents repeatedly raised concerns about the struggle to maintain authority while allowing their teens space to grow and make independent choices. This tension was captured in responses such as, “It’s hard to find that line between giving them freedom and making sure they don’t make mistakes that could hurt them,” and “I want to give them room to make decisions, but I also worry they’re not ready.”

Coding produced categories like Fear of Losing Control and Desire for Teen Independence, which synthesized into Balancing Boundaries and Flexibility. These were later synthesized into the broader theme of Balancing Boundaries and Flexibility. Parents expressed a need to adjust their approach from rigid rule enforcement to a more collaborative and trust-based relationship.

One parent explained, “I realized that when I come down too hard, it just pushes my daughter further away. Maybe I need to find ways to be clear about boundaries without making her feel suffocated.” Comments like these emphasized a common desire to find a balance, and the theme illustrated how parents were exploring ways to establish clear expectations while respecting their teens’ growing autonomy.

Theme 3: Communication as a skill to be developed

Communication challenges were another recurrent topic in parents’ reflections, especially regarding their own communication style and the impact it had on conflicts. Many parents acknowledged that their tone and choice of words often escalated situations, rather than resolved them. As one parent observed, “I see now that sometimes I get defensive without even realizing it. When I react right away, my son shuts down, and we’re back at square one.”

Initial codes included Recognizing Defensive Communication, Reactivity, and Impact of Tone, forming the theme Communication as a Skill to Be Developed. These categories formed the basis for the theme of Communication as a Skill to Be Developed. This theme encapsulated the collective awareness that communication with teenagers requires conscious effort,

patience, and adaptability. Several parents mentioned a new commitment to "pause and listen," a skill they hoped to build over time.

Another parent reflected on the role of active listening, saying, "I'm starting to understand that it's not just about what I want to say—it's about how they're hearing it." This theme illustrated a shift among parents toward more intentional communication practices, with many expressing a desire to become better listeners and less reactive responders.

Theme 4: Shifting from control to collaboration

A fourth theme was Shifting from Control to Collaboration. Parents reflected on moving away from authoritarian approaches toward collaborative problem-solving with their teenagers. Through the process of applying conflict resolution theories in the group exercise, parents came to recognize the potential benefits of involving their teenagers in decision-making and resolving issues together.

One parent remarked, "I've always thought I had to have all the answers, but maybe it's okay to let my son have a say in how we solve our issues." Another shared, "I'm realizing that if we work together on setting boundaries, he might actually respect them more." These remarks resulted in categories such as Recognizing Teen Agency and Co-Creating Solutions, which merged into the theme of collaboration over control.

This shift from controlling behavior to collaborative approaches signified a profound realization for many parents, who expressed a willingness to involve their children more actively in discussions around rules and responsibilities. This theme underscored the role of mutual respect and partnership in building more constructive and enduring resolutions to conflicts.

Theme 5: Emotional self-regulation and Its challenges

The final theme, Emotional Self-Regulation and Its Challenges, highlighted parents' difficulties in managing emotions during conflicts. Many parents acknowledged that their emotional responses often exacerbated conflicts, turning simple disagreements into heated arguments. Statements such as "I need to learn to stay calm, even when my son is pushing all my buttons" and "I get so frustrated that sometimes I lose control, and I know it doesn't help" were coded into categories like Managing Anger and Recognizing Emotional Triggers.

This theme emerged as parents repeatedly discussed the difficulty of maintaining composure and the impact of their own stress levels on conflict escalation. One parent poignantly noted, "I want to be a role model for my daughter, but it's so hard to stay calm in the moment." The theme of emotional self-regulation thus captured the realization that effective conflict resolution requires not only patience with their children but also a significant degree of self-awareness and emotional control.

Discussion

The five themes that were presented in the previous chapter offer a comprehensive picture of the insights and shifts parents experienced during the seminar. Each one of them highlights a specific aspect of conflict resolution that parents identified as pivotal, as well as the personal growth and challenges they encountered in applying these concepts to their relationships with their teenagers.

The use of students' narratives as a focal point in the seminar was instrumental in bringing these themes to light, as it allowed parents to see the conflicts from their children's perspective. In doing so, the thematic analysis revealed not only parents' aspirations to improve their conflict resolution skills but also the emotional and practical obstacles they encountered in this journey. This analysis underscores the potential of students' stories as powerful tools in promoting self-reflection, empathy, and constructive conflict resolution strategies among parents.

The findings of this study highlight the potential of student narratives as a tool for fostering improved parent-teen relationships, especially in the context of conflict resolution. By immersing parents in the real-life experiences of adolescents, this method facilitates deeper empathy and promotes a more nuanced understanding of the emotional and cognitive challenges their children face. This section discusses the implications of these results for parent-teen relationships, analyzes how the use of narratives can enhance parental empathy and conflict resolution skills, and considers the broader impacts of narrative-based interventions in parental education.

The seminar described in this study underscores the importance of parental involvement during adolescence and suggests that narrative-based approaches can significantly enhance the quality of parent-teen interactions. By providing parents with direct access to the perspectives of their children through stories of conflict, the seminar enabled parents to move beyond their assumptions and focus on their children's emotional realities. This shift in perspective is crucial in improving communication and reducing the frequency of misunderstandings between parents and teens, which are often at the core of family conflicts (Smetana, 2011).

Parents who participated in the seminar reported a greater awareness of the emotional triggers that lead to conflicts with their adolescents. By recognizing their own roles in conflict dynamics, parents could approach their children with more patience and understanding. This reflective process aligns with research that suggests parental self-awareness is key to developing effective conflict resolution strategies (Laursen & Collins, 2009). As parents become more attuned to their children’s experiences and emotions, they are better able to respond empathetically, leading to healthier relationships characterized by trust, mutual respect, and open communication.

Furthermore, by applying conflict resolution theory to real-life situations, parents were able to practice new communication strategies in a supportive, structured environment. This hands-on experience helped parents not only understand the theoretical frameworks but also gave them the confidence to implement these strategies at home. Over time, such interventions can lead to long-term improvements in parent-teen relationships, reducing the intensity and frequency of conflicts while fostering emotional closeness.

A key outcome of the seminar was the development of parental empathy, which plays a vital role in conflict resolution. Empathy enables parents to understand and share the feelings of their adolescents, which can de-escalate conflicts and improve problem-solving. The use of student narratives was particularly effective in this regard. By reading and discussing their children's anonymous stories, parents were able to see conflicts from their adolescents’ perspectives, which helped them empathize with the emotional and psychological complexities involved. This form of perspective-taking is critical in improving parent-child interactions, as it shifts the focus from control and authority to understanding and support (Davis, 1983; Galinsky, 2002).

The process of developing empathy also had a transformative effect on parents’ conflict resolution skills. Empathy is closely linked to emotional intelligence, which enables individuals to manage their own emotions and respond effectively to the emotions of others (Gottman, 1997). When parents understand the underlying emotions driving their children’s behaviors, they can approach conflicts with greater emotional regulation and sensitivity. This shift from reactive to reflective conflict resolution can reduce tension and promote constructive dialogue between parents and teens.

Moreover, the seminar reinforced the importance of collaborative problem-solving. By learning to listen actively and validate their children's feelings, parents could model the behaviors they wish to see in their adolescents. This cooperative approach not only strengthens the parent-child relationship but also teaches adolescents valuable life skills in

communication and emotional regulation, setting the foundation for healthier interpersonal relationships throughout their lives.

Beyond the immediate effects on individual parent-teen relationships, narrative-based interventions hold broader implications for parental education and school-family collaboration. The use of storytelling as a pedagogical tool in parental education taps into the human brain's natural affinity for narratives, which enhance learning by making abstract concepts more relatable and easier to understand (Bruner, 1991; Green & Brock, 2000). This narrative-driven approach not only helps parents connect emotionally with their children's experiences but also deepens their engagement in the educational process itself.

The potential applications of narrative-based interventions extend beyond conflict resolution. Schools can utilize student narratives to address a range of issues, from academic stress to peer relationships and mental health challenges. By integrating these personal stories into workshops or other parental education initiatives, educators can foster a culture of empathy and open communication between parents, students, and schools. This holistic approach could lead to a more supportive and collaborative learning environment, with parents taking a more active role in addressing the emotional and social needs of their children (Epstein, 2011).

Additionally, narrative-based interventions can serve as a valuable tool for parents from diverse cultural backgrounds. Adolescents from different cultural contexts often face unique challenges, and the use of narratives can help parents navigate these complexities by offering culturally relevant examples of conflict and resolution. This method can promote inclusivity in parental education, ensuring that all families feel seen and understood in the educational process (Fan & Chen, 2001).

While the results of this study are promising, there are several limitations to consider. The seminar was conducted with a relatively small and homogeneous group of parents, limiting the generalizability of the findings. Future research should expand this approach to more diverse populations, exploring how narrative-based interventions work across different cultural, socio-economic, and family structures. Additionally, long-term studies are needed to assess whether the improvements in empathy and conflict resolution skills observed in the seminar translate into sustained behavioral changes at home.

Another area for further research is the role of adolescents in this process. While this study focused primarily on parental education, incorporating adolescents into these workshops—allowing them to share their narratives and engage in joint problem-solving with their parents—could further enhance the intervention's effectiveness. Exploring this collaborative approach could provide deeper insights into the dynamics of family conflict and contribute to even more effective parental involvement strategies.

Conclusion

The teenage years present a unique set of challenges for both parents and adolescents, marked by increased autonomy, identity exploration, and often, heightened conflict. Navigating these conflicts effectively requires parents not only to understand adolescent development but also to empathize with their children's perspectives. This study has explored how student narratives can serve as a valuable tool in parental education, particularly in enhancing conflict resolution strategies. By engaging with real-life stories of adolescent experiences, parents gain insights into the emotional and cognitive processes of their children, allowing them to reflect on their own parenting approaches and apply conflict resolution techniques more effectively.

The use of narrative pedagogy, as demonstrated in the seminar described in this study, bridges the gap between theory and practice. When parents are presented with authentic narratives of their children's experiences, they are better able to internalize theoretical concepts and translate them into action. This method fosters empathy, critical thinking, and

problem-solving, equipping parents with the tools to handle conflicts constructively and maintain supportive relationships with their adolescents.

Moreover, this approach aligns with contemporary research on parental involvement and adolescent development. As the study shows, student narratives offer a powerful means of enhancing parental engagement by making the challenges of adolescence more tangible and relatable. By integrating narrative-based strategies into parental education programs, schools and educators can play a crucial role in strengthening parent-child relationships, particularly during the tumultuous adolescent years.

Looking ahead, future research should continue to explore the potential of narrative pedagogy in various educational settings, with particular attention to its long-term effects on family dynamics and adolescent well-being. Further studies could also examine how cultural and socio-economic factors influence the effectiveness of narrative-based approaches in parental education.

In conclusion, the use of student stories in parental education represents a promising strategy for enhancing parental involvement and improving conflict resolution within families. By fostering empathy and providing practical applications for conflict management theory, this approach helps parents better understand their adolescents and navigate the complexities of the parent-teen relationship. As schools continue to seek innovative ways to engage parents, incorporating narrative pedagogy offers a meaningful way to support both parents and adolescents during this critical stage of development.

References

Baumrind, D. (1978). Parental disciplinary patterns and social competence in children. *Youth & Society, 9*(3), 239–276.

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

Bruner, J. (1991). The narrative construction of reality. *Critical Inquiry, 18*(1), 1–21.

Clandinin, D. J., & Connelly, F. M. (2000). *Narrative inquiry: Experience and story in qualitative research*. San Francisco: Jossey-Bass.

Collins, W. A., & Laursen, B. (2004). Parent-adolescent relationships and influences. In *Handbook of Adolescent Psychology* (pp. 331–361).

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE Publications.

Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology, 44*(1), 113–126.

Diekelmann, N. (2001). Narrative pedagogy: Heideggerian hermeneutical analyses of lived experiences. *Advances in Nursing Science, 23*(3), 53–71.

Eisenberg, N., & Valiente, C. (2004). Parenting and children's prosocial and moral development. In M. H. Bornstein (Ed.), *Handbook of Parenting, Vol. 5* (pp. 111–142). Mahwah, NJ: Erlbaum.

Epstein, J. L. (2011). *School, family, and community partnerships: Preparing educators and improving schools*. Westview Press.

Erikson, E. H. (1968). *Identity: Youth and crisis*. New York: Norton.

Fan, X., & Chen, M. (2001). Parental involvement and students' academic achievement: A meta-analysis. *Educational Psychology Review, 13*(1), 1–22.

Galinsky, A. D. (2002). Creating and reducing intergroup conflict: The role of perspective-taking in affecting out-group evaluations. In D. M. Mackie & E. R. Smith (Eds.), *From prejudice to intergroup emotions: Differentiated reactions to social groups* (pp. 221–238). New York: Psychology Press.

Gottman, J. M. (1997). *The heart of parenting: Raising an emotionally intelligent child*. New York: Simon & Schuster.

Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology, 79*(5), 701–721.

Green, M. C., Brock, T. C., & Kaufman, G. F. (2006). Understanding media enjoyment: The role of transportation into narrative worlds. *Communication Theory, 14*(4), 311–327.

Grolnick, W. S., & Pomerantz, E. M. (2009). Issues and challenges in studying parental control: Toward a new conceptualization. *Child Development Perspectives, 3*(3), 165–170.

Hill, N. E., & Tyson, D. F. (2009). Parental involvement in middle school: A meta-analytic assessment of the strategies that promote achievement. *Developmental Psychology, 45*(3), 740–763.

Kilmann, R. H., & Thomas, K. W. (1977). Developing a forced-choice measure of conflict-handling behavior: The "mode" instrument. *Educational and Psychological Measurement, 37*(2), 309–325.

Kuhn, D. (2009). Adolescent thinking. *The Journal of Research on Adolescence, 19*(1), 99–114.

Laursen, B., & Collins, W. A. (2009). Parent-child relationships during adolescence. In *Handbook of Adolescent Psychology* (pp. 3–42).

Laursen, B., & Hafen, C. A. (2010). Future directions in the study of close relationships: Conflict is bad (except when it's not). *Social Development, 19*(4), 858–872.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. SAGE Publications.

Mar, R. A., Oatley, K., Hirsh, J., dela Paz, J., & Peterson, J. B. (2006). Bookworms versus nerds: Exposure to fiction versus non-fiction, divergent associations with social ability, and the simulation of social worlds. *Journal of Research in Personality, 40*(5), 694–712.

Mezirow, J. (1997). Transformative learning: Theory to practice. *New Directions for Adult and Continuing Education, 74*, 5–12.

Patton, M. Q. (2015). *Qualitative research & evaluation methods* (4th ed.). SAGE Publications.

Riessman, C. K. (2008). *Narrative methods for the human sciences*. SAGE Publications.

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information, 22*(2), 63-75.

Sillars, A. L., Koerner, A. F., & Fitzpatrick, M. A. (2004). Communication and understanding in parent-adolescent relationships. *Human Communication Research, 30*(1), 1–31.

Smetana, J. G. (2011). *Adolescents, families, and social development: How teens construct their worlds*. Wiley-Blackwell.

Smetana, J. G., Campione-Barr, N., & Metzger, A. (2006). Adolescent development in interpersonal and societal contexts. *Annual Review of Psychology, 57*, 255–284.

Soenens, B., & Vansteenkiste, M. (2010). A theoretical upgrade of the concept of parental psychological control: Proposing new insights on the basis of self-determination theory. *Developmental Review, 30*(1), 74–99.

Steinberg, L. (2001). We know some things: Parent–adolescent relationships in retrospect and prospect. *Journal of Research on Adolescence, 11*(1), 1–19.

Tracy, S. J. (2010). Qualitative quality: Eight "big-tent" criteria for excellent qualitative research. *Qualitative Inquiry, 16*(10), 837-851.

Van Doorn, M. D., Branje, S. J., & Meeus, W. H. (2011). Developmental changes in conflict resolution styles in parent–adolescent relationships: A four-wave longitudinal study. *Journal of Youth and Adolescence, 40*(1), 97–107.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press

Teaching refugee children in Reception (School) Facilities for Refugee Education (DYEP) or Non-governmental organisations (NGOs): teachers' challenges in Greece

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Abstract

This paper aims to present the challenges teachers face when working in Reception (School) Facilities for Refugee Education (Δομές Υποδοχής και Εκπαίδευσης Προσφύγων, ΔΥΕΠ/DYEP) or Non-governmental organisations (NGOs) in Greece and it proposes possible solutions. These challenges have an impact on three main levels: communicative, practical and psychological levels. Active involvement of parents, proper preparation of teachers and the use of children's mother tongue are some of the possible solutions proposed in this qualitative research based on semi-structured interviews. Nine (9) teachers participated and enriched the paper with their views. The interviews, among others, highlighted severe obstacles arising from cultural diversity in the classroom, the language barrier and the lack of valuable textbooks. Additionally, the role of NGOs was emphasised, noting that while they should be complementary, they often fill gaps and address difficulties that DYEP classes cannot.

Keywords: Non-governmental organisations (NGOs), Reception Facilities for Refugee Education (DYEP), teachers' difficulties, language education.

Introduction

The refugee crisis is more relevant today than ever, as millions of people are trying to start their lives anew by leaving their home countries. According to UNHCR figures, 82.4 million forcibly displaced people worldwide had been recorded by the end of 2020; 6.7 million people are from the Syrian Arab Republic, while over 3.0 million are in Turkey (Tsaousidis 2019). Greece's geographical connection with other European countries makes it one of the most crucial host countries (Giannakopoulou 2019). Education is integral to children's smooth adaptation to new circumstances, which can foster children's autonomy and competence (UNICEF, 2017). Reception (school-based) structures for refugee education (DYEPs) and non-governmental organizations (NGOs) are two of the primary sources of education for these children.

The first way of providing education to refugee children coming to Greece is through the Reception (School) Facilities for the Education of Refugees (DYEP). The smooth integration of these children into society and their familiarity with the Greek language were two of the main objectives in improving their psychology and helping them learn the principles and values necessary for their lives. These departments operate either within the school units in areas

where there are nearby accommodation centres or as branches of kindergartens, primary and secondary schools within the accommodation centers and run with 10-20 pupils.

Refugee children coming to Greece can also be educated through the non-formal education provided by NGOs. They are an intermediary way for citizens to communicate with the state and institutions and aim to defend the needs and rights of citizens, especially those who belong to social groups that need support and assistance (Zapantioti 2013). They also support and help refugee children who are left out of education for bureaucratic and personal reasons.

On the other hand, the role of the teacher is an integral part of education in the context of formal, non-formal or informal education. Teachers have a multidimensional and vital role in preparing refugee children's integration into the host country, with all that this implies. Of course, the safety and proper socialization of pupils is one of the most important objectives that teachers have. Respect and acceptance of diversity are also essential features of the lessons. The new reality requires teachers to be able to cope with challenging situations, always prioritising children's well-being (Mogli, Kalbeni, and Stergiou 2019). A healthy and fair environment is essential for effective learning (Paraskevopoulou and Manesis 2021). Students' experiences are a critical element of the educational process, so teachers must be able to use the positive ones by trying to support children to overcome everything they have gone through (Rodgers 2009). The use of children's native language (Cummins 1979, 2001; Daly and Limbrick 2020; Palaiologou 2019), as well as the attempt to communicate between teachers and children's parents (where possible) (Bergset 2017; Koukopoulou 2020; Palaiologou 2019), helps support children and facilitate smoother lesson delivery.

Moreover, the influence of teachers on students is undeniable. This should always be positive, and teachers should serve as appropriate role models (Kovinthan 2016). Finally, adequate teacher training, patience, flexibility, advisory skills, and professional awareness are additional key characteristics that will ensure their effective work in and out of the classroom, dealing with all possible difficulties that may arise (Ntouskas 2006).

Teaching children with a refugee background is an urgent need, a necessary prerequisite for a decent living for these children. Naturally, the demands and difficulties that arise are numerous and of particular importance during the teaching process. Children's past experiences, situations such as violence, loss, exploitation and death, shape the children's present character and can often make the educational process difficult. Firstly, children's psyche is negatively affected, and they often display aggressive behaviours, disorientation, and difficulty in socialising or concentrating (Apatziadou 2018; Khansa and Bahous 2021; Papadatou et al. 2018; Wofford and Tibi 2018). The teacher is required to help the child while maintaining the smooth flow of the lesson, which can be particularly challenging (Kirova 2019; Manesis and Angelopoulou 2017). The second and perhaps most important difficulty that teachers face is communication with their students from different cultural backgrounds. The majority of children does not know Greek, often not even English. The absence of interpreters is evident in many cases, and this does not facilitate the effective integration of children in the host country. Sometimes body language is the only solution, as every teacher can't know all the pupils' languages. Difficulty in understanding, insecurity, lack of confidence and shame are some of the adverse effects on students (Bora 2010; Mason and Orcutt n.d.; Stathopoulou and Dassi 2020). The absence of valuable textbooks further magnifies the problem (Tziona, Palaiologou, and Dinas 2018). Many of those available are inadequate, as refugees who want to learn Greek have entirely different language needs.

A broader logistical infrastructure is also needed to support the course further. Often, teachers prepare their materials to fill in the gaps in the books. This requires more fatigue and time (Manesis 2020; Papapostolou, Manoli, and Mouti 2020). Also, teachers cannot work effectively without state support (Androusou and Iakovou 2020; Papapostolou, Manoli, and Mouti 2020). Another difficulty worth mentioning is the lack of proper training and guidance

for teachers. The knowledge they have and use in a classroom with only children of Greek origin is considered insufficient. A teacher who teaches in a multicultural classroom must be able to reach the children, understand their real needs and help them both practically and psychologically.

Methodology

The main reason for the author's involvement with this topic was the necessity to highlight the needs of teachers working with refugee children. Accordingly, the study was guided by three research questions:

What are the primary challenges that educators face? What difficulties make it tough or even impossible for them to be effective as teachers when teaching refugee children in (School) Facilities for Refugee Education or in NGOs in Greece?

- What are the consequences of these challenges on a communicative, practical, and psychological level? How do these difficulties affect the effectiveness of language learning, and what are the specific consequences that arise on communicative, practical and psychological levels?
- What could be done to overcome these challenges? What actions could be taken to help solve the problems in order to ensure the effectiveness of language teaching and ensure smoother integration and socialisation of these children in society?

The researcher was based on the constructivist worldview, which aims to search for the meaning of things in the world (Vygotsky 1978; Creswell 2014). Therefore, qualitative research was chosen and contributed to an in-depth survey full of detailed findings about the difficulties teachers face when teaching refugee children in DYEPs or NGOs in north-western Greece from September to November 2021.

To collect the necessary data, the researcher conducted semi-structured interviews prearranged in advance in the form of a questionnaire containing 20 questions (3 general questions, the rest based on the three research questions). Thematic categories are linked to interview questions for transparency. The correspondence between the interview questions and the thematic categories and vice versa is analyzed in Table 1:

Table 1: Correspondence between thematic categories and interview questions 1–20

Thematic category & subcategory	*Interview questions*
Results from the general questions	4, 15, 17
Challenges teachers face (Research question 1)	1, 2, 3, 5, 8, 9, 10, 12
Inappropriate educational material	1, 2
Insufficient technical infrastructure	3
The problem of language	5
Children's previous school experience	5, 9
Coexistence of different cultures in the classroom	8
Behavioral problems	9
Children's previous life experiences	9, 10
Major difficulty	12
Consequences of these challenges? (Research question 2)	2, 5, 9, 11, 12, 15
Communicative level	5, 12
Practical level	2, 9, 12
Psychological level	11, 15
How to overcome these challenges? (Research question 3)	6, 13, 14, 16, 18, 19
Use of mother tongue	6
Problem- solving on an individual or group level	13
Communication with the parents of the children	14

Participants were fully informed before the interview about the purpose of the research and the importance of their contribution. Informed consent was obtained from all of them and the interview data were anonymised. The interview questions were both closed and open-ended, structured so that the interview could be structured (Adams 2015). A pilot test was conducted by the researcher, so that she could familiarize herself with the interview process and be as ready as possible to change the flow of the process, depending on the answers of the participants. A supportive atmosphere between the participants was created in order to establish trust and openness (Creswell 2014). Interviews were conducted individually, in separate spaces, to allow participants to express themselves freely. The questions referred to the daily difficulties of the teachers, always trying to find possible solutions through them. The researcher took permission, recorded the interviews, and took some written notes. The interviews were conducted in Greek. In order to "provide knowledge and understanding of the phenomenon under study," the data collected were then analysed using the method of content analysis (Downe-Wamboldt 1992, 314, as quoted in Hsieh and Shannon 2005, 1278).

The participants who took part in this study were five (5) men and four (4) women. Six (6) teachers work at NGOs, and three (3) work in different DYEPs (Table 4). Their age range is between 24 and 50 years old (Table 2). All of them have worked for at least one year with refugees in the past. Apart from primary school teachers and language teachers, mathematicians and other subject-specific teachers were selected for the survey and -as they responded- they know at least one additional language besides their mother tongue (Table 3). The age range of their students is from 4 to 18 years old and most of them come from Afghanistan, Syria and Pakistan (Table 4).

Table 2: Teachers' profile: Personal information

Teacher	*Gender**	*Age***	*Nationality****
Teacher 1	Female	24	Spanish
Teacher 2	Male	31	Greek
Teacher 3	Female	50	Greek
Teacher 4	Female	28	Greek
Teacher 5	Male	26	Greek
Teacher 6	Male	48	Greek
Teacher 7	Female	33	Greek
Teacher 8	Male	29	Greek
Teacher 9	Male	33	Greek

Table 3: Teachers' profile: Educational background

Teacher	*Studies in**	*Known languages***	*Experience in education/*** refugee education (in years)*****
Teacher 1	Primary Education	Greek, Spanish, English, Basque	2 / 1
Teacher 2	Primary Education	Greek, English	7 / 5

Teacher 3	Greek Literature, English Literature	Greek, English, French	25 / 1
Teacher 4	Greek Literature	Greek, English, German	6 / 2
Teacher 5	Greek Literature	Greek, English	3 / 2
Teacher 6	Physics	Greek, English	22 / 3
Teacher 7	Greek Literature	Greek, English, French	10 / 2
Teacher 8	Mathematics	Greek, English	6 / 2
Teacher 9	Mathematics	Greek, English	10 / 1

Table 4: Teachers' profile: Information about teachers' current employment

Teacher	*Institution**	*Age of students (in years)*	*Students' countries of origin*
Teacher 1	NGO	17	Afghanistan
Teacher 2	NGO	3–18	Afghanistan, Algeria, Bangladesh, Ghana, Morocco, Pakistan, Sierra Leone, Somalia, Syria
Teacher 3	DYEP	11–16	Afghanistan, Iraq, Pakistan, Syria
Teacher 4	DYEP	12–18	Afghanistan, Bangladesh, Iraq, Pakistan, Syria
Teacher 5	NGO	15–18	Afghanistan, Bangladesh, Pakistan, Somalia, Syria
Teacher 6	DYEP	15–18	Afghanistan, Albania, Pakistan, Syria
Teacher 7	NGO	5–18	Afghanistan, Congo, Senegal, Somalia, Syria
Teacher 8	NGO	4–18	Afghanistan, Algeria, Bangladesh, Congo, Morocco, Syria
Teacher 9	NGO	12–17	Afghanistan, Gambia, Pakistan, Syria

Researcher reflexivity

The researcher completed an internship at an NGO during the Postgraduate Programme LRM. The internship provided contextual insights into NGO provision and highlighted possible differences or similarities between NGO and DYEP settings; these reflections informed interpretation but are presented as contextual observations rather than primary empirical evidence.

Results

The results obtained from the individual interviews of the nine teachers form the most important part of this article. The following section includes a sample of teachers' responses, together with tables to help organise and better understand the information.

Challenges teachers face

The teacher interviews revealed the following key challenges that they often face in their daily classroom work: 1) Inappropriate educational material, 2) Insufficient technical infrastructure, 3) Language barrier, 4) Previous school experiences, 5) Coexistence of different cultures in the classroom, 6) Children's behavioral problems, 7) Previous experiences/traumas, and 8) language and lack of interpreters, students' concentration difficulties (Table 5).

Table 5: Teachers' responses related to research question 1

Challenges teachers face	*Teachers' responses (T=Teacher)*
1) Inappropriate educational material	T1, T2, T3, T4, T5, T7, T8, T9 (8 of 9)
2) Insufficient technical infrastructure	T1, T2, T3, T4, T5 (5 of 9)
3) Language barrier	T1, T2, T3, T4, T5, T7, T8, T9 (8 of 9)
4) Previous school experiences	T1, T3, T4 (3 of 9)
5) Coexistence of different cultures in the classroom	T2, T3, T4, T5, T6, T7, T8 (7 of 9)
6) Children's behavioural problems	T1, T2, T3, T7 (4 of 9)
7) Previous experiences/traumas	T4, T7, T8 (3 of 9)
8) Primary difficulty: a) language and lack of interpreters, b) students' difficulties in concentration	 T1, T3, T4, T7, T8 (5 of 9) T2, T5, T6 (4 of 9)

Teachers reported a number of recurring challenges in their daily practice. One of the most common concerns was the lack of suitable teaching materials**.** Although they often combined textbooks from NGOs with digital tools such as *Kahoot* or the *Click* series, participants emphasised that existing resources were not fully adapted to refugee learners' needs. As one teacher noted, *"*Unfortunately, n*one of them is 100% suitable for this population"* (T2). This reliance on fragmented resources reflects the absence of a consistent state-provided curriculum tailored to multilingual and multicultural classrooms.

Another significant issue was the insufficient technical infrastructure**.** In many cases, the blackboard is the only available tool, while access to computers or projectors is extremely limited. Teachers in DYEP settings in particular felt disadvantaged compared to NGO programs, which were often better equipped.

The language barrier emerged as the most critical challenge, mentioned by nearly all participants. Without interpreters and with students from diverse linguistic backgrounds, communication was frequently slow and ineffective. One teacher explained: *"There is no common language code and no interpreter… it is impossible for a teacher to know so many languages"* (T4). This situation often hindered lesson progress and contributed to students' lack of confidence.

Teachers also highlighted difficulties stemming from students' previous educational experiences**.** Many refugee children had never attended school before, which made classroom routines unfamiliar and integration harder. In multicultural classes, conflicts related to religion, culture, or gender roles were also common, although one participant stressed that such tensions were reduced when children lived together in structured accommodation.

Finally, participants pointed to behavioural and psychological challenges**,** including fear, isolation, and aggression, often linked to traumatic past experiences. As one teacher observed, *"The journey itself is something violent, a violent event"* (T7), underscoring the deep impact of displacement on children's behaviour.

Overall, while teachers mentioned a range of obstacles-including concentration difficulties and the frequent mobility of students-the insufficient technical infrastructure, the language barrier, and the absence of interpreters, combined with the coexistence of different cultures in the classroom, were consistently described as the most critical factors undermining effective teaching and learning.

Consequences of these challenges?

Problems such as those mentioned above are bound to have consequences in the educational process. The second research question concerns information about consequences at the communicative, practical and psychological levels according to teachers' responses (Table 6).

Table 6: Teachers' responses related to research question 2

Level	*Consequences of the challenges teachers face*	*Teachers' responses (T=Teacher)*
Communicative level	Difficult communication in the lessons	T3, T4, T9 (3 of 9)
	Many delays	T3, T4 (2 of 9)
	No guaranteed effectiveness of the lessons	T4 (1 of 9)
	Problems with children's socialisation	T3 (1 of 9)
	"Use" of other students as interpreters	T9 (1 of 9)
Practical level	No healthy classroom environment	T3, T7 (2 of 9)
	Difficult adaptation of children in the lessons	T3 (1 of 9)
	Modification or creation of educational material	T2, T4, T7, T9 (4 of 9)
	Lack of lesson continuity	T1, T2, T4, T6 (4 of 9)
Psychological level	Confusion	T1, T2, T4, T8 (4 of 9)
	Inadequacy	T1, T3, T4, T8 (4 of 9)
	Isolation	T4 (1 of 9)
	Nonparticipation	T4 (1 of 9)
	Lack of self-confidence	T1, T3, T4 (3 of 9)

It can be concluded that communication and socialisation in the classroom are heavily constrained by the great variety of languages spoken by students. Teachers often rely on peer translation, which, although occasionally helpful, tends to slow down lessons and does not always lead to effective learning. Consequently, achieving positive learning outcomes can be difficult as is referred:

"The class is progressing very slowly; if there were one or two interpreters, it would be easier." (T3)

The interviews also highlight practical challenges in classroom management. Inadequate teaching materials, limited lesson time, and frequent student movement create discontinuities in learning. Moreover, children's difficulties in adapting to classroom rules, combined with verbal and physical conflicts, increase the complexity of teaching. One teacher explained: *"The preparation is quite big; the amount of work has increased a lot because we are talking about students with very specific needs." (T4)*

From a psychological perspective, teachers report that children frequently experience frustration, resignation, and a desire to disengage from lessons. Unequal treatment by teachers further exacerbates discouragement and hinders motivation. One teacher mentioned: *"Unfortunately, they get frustrated very easily; they feel they can't cope and often want to give up." (T4)*

It is important to note that these findings are based on a small sample of teachers and may not be generalizable to all educational contexts. Nevertheless, they provide valuable insights into the challenges faced in multilingual classrooms and highlight the need for targeted

pedagogical strategies and adequate support to enhance both learning outcomes and student well-being.

How to overcome these challenges?

The last part concerns the third research question, about the possible solutions to the above problems. Six possible solutions to the above issues emerged from the interviews. The teachers came up with both individual and group/state actions, such as the use of the mother tongue, problem-solving at individual and group levels, communication with the children's parents, government support, skills that teachers should have and teachers' training (Table 7).

Table 7: Teachers' responses related to research question 3

How to overcome these challenges?	*Teachers' responses (T=Teachers)*
Use of mother tongue	T3, T4, T9 (3 of 9)
Problem-solving on an individual or group level	T3, T4, T7, T8, T9 (5 of 9)
Communication with the parents of the children	T2, T4, T7 (3 of 9)
Government support (appropriate educational material, interpreters, timely teacher placement, faster asylum case management)	T1, T3, T7 (3 of 9)
Skills teachers should have (patience/adaptability, teachers' willingness to engage with children)	T1, T2, T3, T8 (4 of 9)
Teachers' training	T1, T2, T3, T4, T5, T6, T7, T8, T9 (9 of 9)

Teachers' responses highlighted the significance of using the mother tongue in supporting children's psychological well-being and learning outcomes. Allowing and encouraging students to use their first language was reported to facilitate communication, build trust, and enhance engagement in lessons, as one participant responded: *"Yes, because they feel more comfortable… they are more consistent in the lessons." (T9)*

Regarding the question of problem solving on an individual or group level, teachers emphasized that effective solutions require action at both fronts. On the individual level, personal study and continuous adaptation of teaching practices were seen as vital: *"Each teacher must study and devote personal time to prepare a well-rounded lesson."* (T4). At the group level, participants stressed the crucial role of the Ministry of Education in ensuring stable school attendance and institutional support, noting that *"The participation of children in general in formal education, not to be refused to go to school. It will do them good to be there with other children so they will start speaking the language on their own."* (T9).

Another important element mentioned by teachers was communication with parents, where possible, since many students are unaccompanied minors. Such collaboration can encourage children, create common goals, and provide teachers with valuable information about the child's life: *"It helps a lot in terms of formality. Because there is also a control from the side of the family, in those children who have families of course."* (T2).

Teachers also stressed the necessity of additional state support. Timely placement of teachers, provision of educational materials, recruitment of interpreters, and expedited management of asylum procedures were considered critical to improve learning conditions: *"…early placement of teachers for children in schools… the asylum procedures would be important to be faster so that children are not 'in the air,* in one thing that 'I don't want to learn Greek, because I will leave from here" (T7).

Personal qualities of teachers, such as patience, flexibility, and the ability to relate meaningfully to students, were consistently highlighted as crucial for managing the challenges of multilingual and refugee classrooms. As a teacher responded: *"To be very adaptable and basically to have patience, perseverance, adaptability." (T8)*

Finally, participants emphasised the importance of continuous professional development. Targeted training can equip teachers to approach students from diverse cultural backgrounds effectively and address the complex needs of refugee students: *"Continuous training is needed. Regarding refugees, better training is needed in ways of reaching, not communicating, reaching people."* (T2)

These findings, while insightful, are based on a small sample of teachers and should be interpreted with caution. Nevertheless, they provide important implications for educational policy and practice, highlighting areas where institutional support, teacher training, and pedagogical adaptation are essential to improve both learning outcomes and students' psychological well-being.

Discussion

Regarding the challenges teachers face, the lack of appropriate teaching materials and the lack of technical infrastructure are two inextricably linked difficulties, among the most important, according to their responses. Many teachers rely on NGO textbooks which are often considered more effective. However, as Tziona, Palaiologou, and Dinas (2018) note, although the textbooks of the DYEP departments are targeted at beginning learners, they do not address the specific needs present in the classrooms. Furthermore, audiovisual materials seem to facilitate the process a lot and according to Rodgers (2009), various methods such as the auditory language method are often preferred by teachers. Finally, regarding the lack of technical infrastructure and other materials, greater shortcomings were expressed by teachers of DYEP departments who often do not have access to computers or markers. These views are also confirmed by Manesis' study (2020) emphasizing that the flow of lessons sometimes becomes too difficult for all those present in a classroom. Another difficulty mentioned was the language barrier and many times the lack of a common language code and the absence of interpreters make communication in the classroom impossible, creating long delays. According to the Save the Children report (Mason and Orcutt n.d.), learning the host country's language is essential. On the other hand, this process is often not easy, and as a result, students need extracurricular support.

Another important problem reported by teachers is the lack of previous school experience of children. Furthermore, many of the children have zero educational background, and as a result, they do not even know the basic functioning of a classroom. Wofford and Tibi (2018) report that children from Syria often do not have access to education, because of the war. Additionally, according to Cummins (1979), the existence of several mother tongues in a classroom makes learning even more difficult as the two languages support each other. Manesis and Angelopoulou (2017) note that physical or verbal violence can also occur in a classroom, as well as socialisation problems and racist attitudes, due to the presence of children from different cultural backgrounds; this can only be solved by promoting the importance of diversity.

Moreover, behavioral problems such as fear, isolation and even violence as well as children's traumatic experiences are the final interlinked challenges mentioned in their interviews. The majority of teachers stressed that these past experiences affect children's daily life in general and therefore, their behavior during lessons; this is consistent with Murray's view that "the high prevalence of psychosocial problems experienced by refugee children affects their ability to concentrate and learn as well as interact with their peers" (Murray 2019, 9, as quoted in Stathopoulou and Dassi 2020, 62). Finally, according to Apatziadou (2018) many children find it difficult to adapt to the host country due to different kinds of exploitation, fear and stress.

Regarding the communicative level, the interviewees responded that delays in lessons and their non-guaranteed effectiveness are a fact, as communication between teachers and students is often difficult or even impossible. In addition, according to the research analysed by Kirova (2019), difficulty in socialisation and lack of self-confidence are also important consequences. Finally, the interviewees noted that the absence of interpreters leads teachers to solutions such as relying on other students as mediators to be able to ensure at least minimal understanding in the classroom. Similar solutions are mentioned in Manesis' study (2020), too.

According to the teachers' responses, practical problems -such as the misbehaviour of children and their inability to adapt to the classroom- can be mentioned as a result of the absence of a nice atmosphere in the classroom. Papapostolou, Manoli, and Mouti (2020) note that teachers are asked to create their own educational material as the one provided by the Ministry of Education is not always effective. Additional problems, such as the lack of continuity in lessons, create a great feeling of uncertainty among children (Androusou and Iakovou 2020).

Another key issue concerns the psychological difficulties faced by refugee children, which strongly affect their learning. According to interviewees, confusion, inadequacy, isolation, and nonparticipation in lessons, due to lack of self-confidence, are factors that often lead to negative performance in lessons and inability to socialize. Reference to similar situations such as isolation and confusion among children is also made by Khansa and Bahous (2021). Furthermore, according to Wofford and Tibi (2018), literacy is of paramount importance to make children more willing to participate in the integration phase and thus in the host country language learning lessons. Finally, similar information on the psychological state of children- both during and after the refugee journey- is provided by the Greek non-profit organization for the care of children and families facing illness and death, "Merimna," and sheds light on the causes of these behaviors (Papadatou et al., 2018).

Possible solutions to the above problems emerged from the interviews. In more detail, the children's mother tongue is mentioned as the first one as it helps both the communication and psychology of the children. Similarly, children's cultural retention, self-confidence and academic progress are enhanced by using the language they already know, according to Daly and Limbrick (2020). An important example is a case study conducted in a primary school in Thessaloniki, Greece, that highlighted the positive contribution of bilingual materials to children (Palaiologou 2019). Moreover, according to Cummins (2001, 5), "to reject a child's language in school is to reject the child" which makes it necessary to respect the language and culture of each student. The second possible solution involved better teacher training and support from the Ministry of Education, which will be discussed in more detail below. Moreover, more active parental involvement in their children's educational process is considered by teachers necessary to address basic problems and set common goals such as the joy of children. This cannot be realised in cases of NGOs where children are unaccompanied. Bergset (2017) and Koukopoulou (2020) stress the need for positive parental involvement. Going back to state support is perhaps the most important solution, especially for DYEPs in which teachers often feel lonely and helpless. Better organisation, effective books, interpreters, timely assignment of teachers to classes and faster processing of asylum cases are teachers' key demands. The above problems are also mentioned by the Greek Ombudsman (2021), according to which there are many delays in holding classes due to a lack of vacancies or space and the inability to transport children to schools. Finally, the positive characteristics of an effective teacher, such as flexibility, adaptability, patience as well as the willingness to get to know their students better, combined with better training, will lead to positive results in the classroom, as the teachers responded. Similarly, according to research by Marouli (2017) and Mogli, Kalbeni, and Stergiou (2019), many teachers feel inadequate and unable to deal with problems in the classroom. In order to be able to create a climate without

prejudice and stereotypes but with love and respect, teachers need to be better trained and for their own convenience, but most importantly to be able to support their students.

Issues that arose from the internship of the researcher

To enrich the discussion, some concerns from the researcher's internship within this postgraduate program are noted. The NGO, where the internship took place, appeared well organized with strong support from volunteers and interns, unlike DYEP teachers who often lack sufficient state backing. The NGO primarily works with unaccompanied minor boys; the researcher worked with two students, a 16-year-old student from Syria and a 17-year-old student from Afghanistan. The NGO offered well-equipped classrooms, multilingual books, and even an interpreter (not needed here due to the children's good English). Volunteers and trainees played a crucial role, contrasting with the DYEP teachers' limited support. The students' expressed wish to continue lessons beyond compulsory hours raised questions about the boundaries between formal and non-formal education in Greece. While these observations cannot represent the full picture, they highlight how NGOs often compensate for gaps in formal refugee education.

Conclusions and suggestions for further research

The need for millions of people, including children, to leave their homes and seek a safer life is currently affecting many countries in Europe and beyond, including Greece. The education of these people is becoming an undeniable necessity. In Greece, NGOs and DYEP departments are involved in the education of refugee children. This task becomes particularly challenging every day for teachers who face many challenges. The language, the children's culture, their previous school experience, and issues such as the lack of appropriate textbooks and other infrastructure are some of the most important problems presented. The consequences of these problems relate to children's communication, practice and psychology. Some of the proposed solutions include using children's mother tongue, parental involvement and state support, which in many cases do not exist. Therefore, future research on the difficulties, the creation of additional educational material, such as books for specific groups of students and their needs, as well as the role of the Ministry of Education and the Ministry of Immigration and Asylum, but also formal and non-formal education, is deemed necessary.

This study -conducted within the framework of a Postgraduate Programme (Stork, 2022)- faced certain limitations. Some interviews had to be conducted via Skype due to the COVID-19 pandemic, as the researcher prioritised participants' comfort and safety over face-to-face contact. Another limitation was the relatively small sample, comprising nine teachers, and restricted to the north-western region of Greece. While adequate for exploring the research questions, a larger sample could have offered richer insights. Finally, the limited number of participants made any percentage-based evaluation of responses unnecessary, particularly given the mix of closed and open-ended questions.

References

Adams, W. C. 2015. "Conducting Semi-Structured Interviews." In *Handbook of Practical Program Evaluation*, ed. by K. E. Newcomer, H. P. Hatry, and J. S. Wholey, 492–505. Hoboken, NJ: Wiley. https://doi.org/10.1002/9781119171386.ch19.

Androusou, A., and M. Iakovou. 2020. "Refugee Children's Integration in Greece: Training Future Teachers to Face New Educational Challenges." *International Journal of Early Years Education* 28 (2): 162–175. https://doi.org/10.1080/09669760.2020.1765090.

Apatziadou, B. 2018. "Didaskontas sta prosfygopoula: Mia apotimisi ths empeirias ton ekpaideytikon" [Teaching Refugee Children: An Evaluation of Teachers' Experience]. M.A. thesis. University of Western Macedonia.

Bergset, K. 2017. "School Involvement: Refugee Parents' Narrated Contribution to their Children's Education while Resettled in Norway. *Outlines – Critical Practice Studies* 18 (1): 61–80. https://tidsskrift.dk/outlines/article/view/26262.

Bora, Z. M. 2010. "H ekpaideusi ton anilikon kai asynodeuton anilikon prosfygon stin Ellada" [The Education of Minors and Unaccompanied Refugee Minors in Greece]. M.A. thesis. Thessaloniki, GR: Aristotle University of Thessaloniki

Creswell, J. W. 2014. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. 4th ed. Los Angeles et al.: SAGE.

Cummins, J. 1979. "Linguistic Interdependence and the Educational Development of Bilingual Children. *Review of Educational Research* 49 (2): 222–251. https://doi.org/10.3102%2F00346543049002222.

Cummins, J. 2001. Bilingual Children's Mother Tongue: Why is it Important for Education? *Sprogforum* 7 (19): 15–20.

Daly, N., and L. Limbrick. 2020. "The Joy of Having a Book in your Own Language. Home Language Books in a Refugee Education Centre." *Education Sciences* 10 (9): 250. https://doi.org/10.3390/educsci10090250.

Downe-Wamboldt, B. 1992. "Content Analysis: Method, Applications, and Issues." *Health Care for Women International* 13: 313–321. https://doi.org/10.1080/07399339209516006.

Giannakopoulou, P. 2019. "Ekpaideusi paidion kai anilikon prosfygon sthn Ellada: Politikes, draseis kai xorikes diastaseis" [The education of refugee children and minors in Greece: Policies, projects and spatial dimensions]. M.A. thesis. Thessaloniki, GR: Aristotle University of Thessaloniki.

Greek Ombudsman. 2021. *Ekpaideutiki entaxi paidion pou diavioun se domes kai K.Y.T. tou Ypourgeiou Metanasteusis kai Asilou.* [Educational integration of children living in structures and shelters of the Ministry of Immigration and Asylum]. https://www.synigoros.gr/resources/docs/20210420-porisma.pdf.

Hsieh, H.-F., and S. E. Shannon. 2005. "Three Approaches to Qualitative Content Analysis. *Qualitative Health Research* 15 (9): 1277–1288. https://doi.org/10.1177%2F1049732305276687.

Khansa, J., and R. Bahous. 2021. "Challenges of Teaching Syrian Refugee Children in Lebanon: Teachers' Insights. *Intercultural Education* 32 (3): 280–295. https://doi.org/10.1080/14675986.2020.1867509.

Kirova, A. 2019. "Introduction: Syrian Refugees' Encounters with the Educational System in their Initial Resettlement in Canada." *Journal of Contemporary Issue in Education* 14 (1): 1–12. https://doi.org/10.20355/jcie29369.

Koukopoulou, N. 2020. "Refugee Parent Engagement in Greek Schooling through the Eyes of Significant Others." M.A. thesis. Patras, GR: Hellenic Open University.

Kovinthan, T. 2016. "Learning and Teaching with Loss. Meeting the Needs of Refugee Children through Narrative Inquiry." *Diaspora, Indigenous, and Minority Education. Studies of Migration, Integration, Equity, and Cultural Survival* 10 (3): 141–155. https://doi.org/10.1080/15595692.2015.1137282.

Manesis, N. 2020. *Ekpaideytikes anagkes anilikon prosfygon.* [Educational Needs of Refugee Minors]. Athens, GR: Koinoniko Polykentro Athens.

Manesis, N., and P. Angelopoulou. 2017. "Students from Different Cultural Backgrounds, their Difficulties upon Elementary School Entry in Greece and Teachers' Intercultural Educational Practices." *British Journal of Education* 5 (4): 9–18.

Marouli, E. 2017. "Investigation of Perceptions and Training Needs of Teachers in Primary Education who Work with Refugee Students in General Schools (Cases of ZEP1, ZEP2, RFRE)." M.A. thesis. Patras, GR: Hellenic Open University.

Mason, C., and Sh. Orcutt. n.d. *Hear it from the Teachers. Getting refugee children back to learning*. Save the children.

https://www.savethechildren.net/sites/default/files/Hear%20it%20from%20the%20Teachers.pdf.

Mogli, M., S. Kalbeni, and L. Stergiou. 2019. "'The Teacher is not a Magician': Teacher Training in Greek Reception Facilities for Refugee Education." *International e-Journal of Educational Studies* 4 (7): 42–55. https://doi.org/10.31458/iejes.605255.

Murray, J. S. 2019. "War and Conflict: Addressing the Psychosocial Needs of Child Refugees." *Journal of Early Childhood Teacher Education* 40 (1): 3–18. https://doi.org/10.1080/10901027.2019.1569184.

Ntouskas, N. 2006. "O rolos tou ekpaideutikou sto sygxrono sxoleio." [The Role of the Teacher in the Modern School]. Epistimoniko Bima tou Daskalou 7, 28–41.

Palaiologou, N. 2019. *AVIOR case study report – Greece*. University of Western Macedonia.https://avior.risbo.org/wp-content/uploads/2019/09/GREECE_Case-study_def.pdf

Papadatou, D., D. Tselepi, E. Manatou, E. Kamberi, and I. Giannopoulou. 2018. *Psychosocial Support for Refugee Children and Families.* "Merimna" Society for the Care of Children and Families Facing Illness and Death. National and Kapodistrian University of Athens. https://merimna.org.gr/wp-content/uploads/2018/04/Unicef_Merimna_en.pdf.

Papapostolou, A., P. Manoli, and A. Mouti. 2020. "Challenges and Needs in the Context of Formal Language Education to Refugee Children and Adolescents in Greece." *Journal of Teacher Education and Educators* 9 (1): 7–22.

Paraskevopoulou, E., and N. Manesis. 2021. "Ekpaidevontas paidia prosfyges: Gnoseis kai antilipsis ekpaideutikon. H diapolitismiki etoimotita kai o rolos tous" [Educating Refugee Children: Teachers' Knowledge and Perceptions – Intercultural Preparedness and their Role]. In *4o Panellinio Sinedrio "Ekpaideusi ston 21o aiona: Sxoleio kai Politismos."* Vol. 4, ed. by G. Papadimitriou and Ch. Kostaris, 33–43. Athens, GR: Athens College.

Rodgers, T. S. 2009. "The Methodology of Foreign Language Teaching: Methods, Approaches, Principles." In *Handbook of Foreign Language Communication and Learning*, ed. by K. Knapp, and B. Seidlhofer, 341–373. Berlin et al.: Mouton de Gruyter. https://doi.org/10.1515/9783110214246.3.341.

Stathopoulou, M., and P. Dassi. 2020. "Teaching Languages to Students from Refugee and Migrant Backgrounds around Europe: Exploring Difficulties and Teachers' Beliefs." *International Online Journal of Education and Teaching* 7 (1): 60–82. http://iojet.org/index.php/IOJET/article/view/792.

Stork, M. 2022. *Teaching refugee children: The challenges teachers face when working in Reception (School) Facilities for Refugee Education (DYEP) or Nongovernmental Organizations (NGOs).* Postgraduate Dissertation, Postgraduate Programme *Language Education for Refugees and Migrants*. Hellenic Open University. https://apothesis.eap.gr/archive/item/71219

Tsaousidis, A. 2019. "Antilipseis ekpaideutikon pou ergazontai stis domes ypodoxis kai ekpaideusis prosfygon (DYEP) gia tin poiothta tis ekpaideysis ton prosfygon mathiton." [Perceptions of Teachers Working in Refugee Reception and Education Facilities (DYEP) on the Quality of Education of Refugee Pupils]. M.A. thesis. Patras, GR: Hellenic Open University.

Tziona, G., N. Palaiologou, K. Dinas. 2018. "Didaskalia stis zones ekpaideftikis proteraiothtas kai stis domes ypodohis gia thn ekpaideush twn prosfugwn: antapokrinetai to uparhon glwssiko yliko stis nees sunthikes ekpaideusis;" [Teaching in Priority Education Zones and Reception Classes for Refugee Education: Does the Existing Language Respond to the New Educational Conditions?]. In *Proceedings of the 2nd International Conference: "Literacy and Modern Society: Spaces, Reasons, Practices,"* 381–404. Nikosia, CY.

UNICEF. 2017. *Refugee and Migrant Children in Greece*. UNICEF Greece. https://www.unicef.org/eca/sites/unicef.org.eca/files/eca-dataprod-Refugee_and_migrant_children_in_Greece-_data_analysis_August_2017.pdf.

Vygotsky, L. 1978. *Mind in Society: The Development of Higher Psychological Processes.* Cambridge, MA: Harvard University Press.

Wofford, M. C., and S. Tibi. 2018. "A Human Right to Literacy Education: Implications for Serving Syrian Refugee Children." *International Journal of Speech-Language Pathology* 20 (1): 182–190. https://doi.org/10.1080/17549507.2017.1397746.

Zapantioti, E. 2013. "O rolos ton M.K.O. kai ton ethelontikon organoseon stin parohi ypiresion ygeias kai pronoias" [The Role of NGOs and Voluntary Organizations in the Provision of Health and Welfare Services]. M.A. thesis. Athens, GR: University of Piraeus.

Perceptions of Primary School Principals in the prefecture of Larisa regarding the Introduction of Artificial Intelligence into School Administration

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Abstract

Artificial Intelligence (TN- Artificial Intelligence/ AI) is rapidly transforming several sectors, including the field of education. Although an increasing number of people around the world are becoming interested in AI, there is insufficient research on Greek primary education, especially regarding how Artificial Intelligence can be used in administration. The aim of the present study constitutes the investigation of the attitudes and intentions of principals in primary education schools in the Prefecture of Larisa regarding the implementation and future utilization of Artificial Intelligence tools in school administration. Despite the relatively limited number of participants in the present study, its findings may contribute to decision-making at local and national levels and guide future research. Artificial Intelligence could significantly improve school administration, but it will be effective only if it is used carefully and with due consideration for students' well-being, principals' autonomy, and the importance of human relationships.

Keywords: artificial intelligence, school administration, primary education

Introduction

Research problem and purpose

Artificial Intelligence (TN- Artificial Intelligence/ AI) is rapidly transforming several sectors, including the field of education. Artificial Intelligence is not only useful for teaching and learning, but is also viewed as a potential tool for the effective functioning of schools. It can help automate monotonous tasks, analyze data and improve communication and decision-making processes (UNESCO, 2023).

Although more and more people around the world are becoming interested in AI, there is not sufficient research on the Greek primary education sector, especially regarding how Artificial Intelligence can be used in administration (Neofotistos & Karavakou, 2018). Principals are the most important individuals in the educational process and the ones who handle most of the administrative work (Ertmer & Ottenbreit-Leftwich, 2010). They are also very important in deciding whether and how schools can use these kinds of technologies (Luckin et al., 2016; Holmes et al., 2019).

The aim of the present study is to investigate the attitudes and intentions of principals in primary schools in the Prefecture of Larisa regarding the implementation and future utilization of Artificial Intelligence tools in school administration.

Research questions

The following qualitative study aims to answer the following research questions:

1. How do primary school principals understand and characterize Artificial Intelligence in the context of school administration?
2. What do they think and what do they plan to do regarding the possible implementation of Artificial Intelligence in administrative tasks?
3. Which factors facilitate or hinder schools in using Artificial Intelligence in their management?
4. What ethical, legal or educational issues do they raise?

5. What do principals believe is the best way to use Artificial Intelligence in the administrative work of the school?

Significance of the study

The following study contributes to the emerging issue of artificial intelligence in education, focusing on the perceptions and intentions of principals within a specific geographical context, the Prefecture of Larisa. It also provides useful information that can benefit policymakers, educational authorities and programmes that train teachers on ethics and challenges related to professional readiness.

Theoretical framework and literature review

Artificial Intelligence in education

Artificial Intelligence refers to computer systems that can correct errors, solve problems and make choices autonomously. Increasingly, school classrooms are moving towards utilizing AI technology. Artificial Intelligence is used in applications that help teachers monitor their students' performance by analyzing data, adapting lessons and checking assignments. Artificial Intelligence is now helping to manage the school by creating timetables, sending messages and processing huge volumes of data more quickly than humans can (Russell & Norvig, 2021; Mandal & Mete, 2023).

Artificial Intelligence contributes to the proper management of the school. Teachers and principals are burdened with a great deal of bureaucracy, such as reports, discussions with parents and school staff. Artificial Intelligence systems could carry out many of these bureaucratic tasks, which would give teachers more time to teach effectively and with greater motivation. An Artificial Intelligence system could automatically summarize student data, send notifications or detect attendance patterns that need to be examined. This service saves time and keeps school information up to date, which is very important for smooth operation (Holmes et al., 2019).

Most importantly, Artificial Intelligence can help educators devote greater attention to their students. They can devote more time to getting to know their students and each individual's needs, preparing lessons and collaborating with other teachers (Anastasopoulou et al., 2025). Artificial Intelligence can help school principals improve or plan how they will allocate resources by providing them with useful information. Artificial Intelligence should support people rather than replace them, with the educational process maintaining its human-centred character—a point emphasized by educators, who stress that the use of Artificial Intelligence should be limited exclusively to areas where it is necessary and not extended across all educational fields. Artificial Intelligence should therefore function in a supportive role, with its systems being fully subject to human control (Gocen & Aydemir, 2020; Anastasopoulou et al., 2025). AI in schools must follow rules of privacy, openness and fairness. Therefore, technology can enhance the human side of teaching (OECD, 2021; Luckin et al., 2016; European Commission, 2019; OECD, 2021).

Adequate professional development of educators regarding the utilization of Artificial Intelligence tools is considered crucial in this field, as a fundamental weakness lies in the insufficient knowledge of how to use these innovative means. The educational community, although supportive of the integration of Artificial Intelligence into teaching practice, simultaneously appears hesitant, emphasizing the need for the development of a clear instructional framework and the provision of appropriate support (Wang & Cheng, 2021). At the same time, ensuring equal opportunities for access to the use of Artificial Intelligence for all students is considered essential; however, this condition proves difficult to implement in practice, as various inequalities emerge with regard to the provision of appropriate technological equipment and resources, particularly in decentralized school units (Mehdaoui, 2024). Equally significant are the differences related to educators' competence in the use of contemporary Artificial Intelligence tools, with technological familiarity, prior experience,

access to relevant technological and online resources, as well as subjective attitudes towards technology constituting key parameters that generally shape their stance towards the utilization of Artificial Intelligence (Ofosu-Ampong, 2023).

School administration and technological transition

For a school to function properly, lessons and events need to be planned, curricula created, staff and resources coordinated and the overall progress of students and the performance of the school monitored. The responsibilities that teachers are burdened with can often be difficult and time-consuming. Because of this, they have less time to devote to their students. Administrative staff also often have more work to complete, which means they have less time to be creative, to collaborate and to think about what they are doing (OECD, 2019; Selwyn, 2019).

Artificial Intelligence could help with some of these issues and obligations. It can help systems automatically collect and organize data, report attendance or performance, send reminders or announcements and even help school authorities make decisions based on facts rather than their instincts. An AI programme can, for example, examine patterns in how often students come to school to inform staff of potential difficulties early on, or send parents personalized messages. In this way, both teachers and school leadership can be relieved, gain time and be freed from the burden of work (Williamson & Eynon, 2020).

Equally important would be the benefits of utilizing artificial intelligence in school administration. It is clear that speed and accuracy of work have significant benefits, especially in a school environment; however, it is not possible to ignore important issues such as privacy, data security and the ethical parameters of using artificial intelligence. Schools hold this information; therefore, it is vital that Artificial Intelligence systems handle the personal information of children and their families in a responsible and transparent way. In order for Artificial Intelligence to truly contribute to education, there must be clear ethical rules about how technology should be used and companies must pledge that they will always put people above everything else (Van Dijk, 2020; UNESCO, 2021).

Theoretical models

There are many useful theoretical models that can help us understand how educators perceive and wish to implement Artificial Intelligence in educational administration. The well-known Technology Acceptance Model (TAM) was created by Thomas Davis (1989). People are more willing to use new technology if they believe it will make their work easier and help them. Teachers are more willing to adopt and use Artificial Intelligence in their daily lives if they believe that it will really help them save time or carry out their administrative responsibilities better and if they are convinced that they can use it. The belief that the utilization of Artificial Intelligence tools can facilitate their everyday professional life, while simultaneously providing innovative opportunities for instructional approaches, strengthens educators' positive attitudes towards Artificial Intelligence (Mailizar, Almanthari & Maulina, 2021).

In 2003, Venkatesh and his colleagues created the Unified Theory of Acceptance and Use of Technology (UTAUT). It strengthens this approach by illustrating the effect of social and environmental factors on individuals' use of technology. This theory states that a teacher's choice to develop Artificial Intelligence is based on more than how they feel. The views of their colleagues, the expectations of school principals and whether they have the necessary tools and support also play a role. Teachers are more likely to be willing to use Artificial Intelligence (AI) tools if their schools make it easier for them to do so by providing them with clear guidelines, easy access to technology and an environment where new ideas are welcome.

Rogers' (2003) Theory of the Diffusion of Innovations is another way of looking at this that fits with it. It examines how new ideas and tools spread within a community. It emphasizes how important it is to think about the benefits that people believe new technologies will offer,

how well they fit with old ways and how easy it is to try them out and monitor them before they are fully adopted. This implies that teachers need to experience real benefits, feel that AI fits with their goals and daily routines and be able to test it in limited, safe ways before it can be implemented in schools. Alongside these approaches, ethical and regulatory frameworks such as the General Data Protection Regulation (GDPR) and data protection laws remind us that new technologies used in education must also be fair, transparent and safeguard people's privacy. All these frameworks help educators understand not only how effective and easy Artificial Intelligence is, but also whether it is ethically acceptable and trustworthy in the sensitive environment of school administration (GDPR, 2016; European Commission, 2019).

Methodology

Research design

This study applies a qualitative research design, which is based on the interpretation and understanding of individuals' experiences and their environment. This approach seeks to explore the deep meanings behind principals' perspectives and experiences, rather than seeking numerical measurements or broad generalizations. The aim of the present research is to clarify how primary school principals in the Prefecture of Larisa perceive Artificial Intelligence (AI) and interpret its potential role in school administration. Each educator has a different view based on their personal history, their years of experience and the school in which they work. The interpretive approach, by focusing on context and personal meaning, allows the researcher to capture the complexities of human knowledge and emotion regarding the integration of AI into a traditionally human-centred area such as education.

The study uses the semi-structured interview as the main method of data collection to achieve this approach. This research method provides both structure to the study and flexibility. Each participant is asked the same basic questions, ensuring that responses are consistent. However, participants also have the opportunity to elaborate on their views and offer personal experiences. This open type of discussion helps the researcher to find new insights, understand things and follow interesting issues that arise during the conversation. In these in-depth discussions, participants can talk about more than just their thoughts on Artificial Intelligence. They can also talk about how they feel, what they hope for and what concerns them about how it may affect their work. These qualitative data are extensive and detailed, giving us a clear picture of how educators in the Prefecture of Larisa see the advantages and disadvantages of using Artificial Intelligence in school administration.

Sample

The research sample consists of primary school principals who work in the Prefecture of Larisa. The total number of respondents is 6 participants, who were selected through purposive sampling to ensure diversity in terms of:

1. School environment (urban, semi-urban, rural)
2. Years of experience
3. Participation in administrative duties
4. Gender and age

This sample selection aims to capture a range of perspectives rather than statistical representation.

Research tool

The semi-structured interview allowed participants to discuss their ideas in depth while staying on topic, which helped them to have open and creative discussions. The interview questions were organized into thematic groups based on the objectives of the study and were as follows:

1. How do you perceive the concept of "Artificial Intelligence" within the context of school administration?
2. In what ways do you believe that Artificial Intelligence could contribute to facilitating educators' work in administrative tasks?
3. What potential challenges do you identify in the use of Artificial Intelligence for school administration? Do you have any concerns?
4. How confident or prepared do you feel to use this type of technology?
5. What kind of training or support do you consider necessary prior to the implementation of Artificial Intelligence tools?
6. In your opinion, what ethical or legal issues may arise from the use of Artificial Intelligence in schools?
7. How do you envision the school of the future, should Artificial Intelligence become an integral part of everyday school administration?

The use of open-ended questions was selected, as they enable the development of a dialogic discussion with each respondent, allowing for the full presentation of their views and, consequently, the capture of their subjective perspective. This is something that closed-ended questions do not permit due to the fixed nature of possible responses. The design of the research instrument was based on a prior review of the relevant literature, through which points of interest were identified by examining recent related studies. These points were subsequently addressed through the formulated interview questions, a fact that enhances the validity of the present research instrument (Bengtsson, 2016). Prior to the main data collection, a pilot test of the interview protocol was conducted with one experienced principal (not part of the study sample). The purpose was to assess the clarity, comprehensibility, and appropriateness of the questions, as well as to estimate the interview duration. Feedback from this pilot phase led to refinements in the phrasing of certain questions and confirmed the overall suitability of the guide for eliciting in-depth responses on the research topic.

The other themes helped participants make Artificial Intelligence more useful for their work. Participants were asked about potential benefits, such as increased efficiency or accuracy in administration, as well as problems and concerns that would hinder its acceptance, such as lack of adequate training, the obligation to do more work or ethical concerns. Participants often showed hesitation about ethical and legal issues, such as data protection, transparency and accountability. Therefore, particular attention was paid to these.

Finally, in the interviews participants were asked to imagine how Artificial Intelligence would be used in school administration, how the technology would affect their work culture and how it would be transformed. These themes created a balanced and comprehensive framework that allowed participants to talk about the existing school environment and to think about what a school with Artificial Intelligence would look like in the future.

Data collection procedure

Before the data collection process began, access permissions to educational institutions were required. The researcher informed the Primary Education Directorate of the Prefecture of Larisa about the aim of the study and requested permission to speak with the school principals. This ensured that the research complied with ethical and transparency rules and showed respect for school administration. The approval indicated that the initiative was interested in being informed about what principals had to say, rather than judging their work, which strengthened trust and openness in the dialogue.

After authorization, the search for participants began. Participants were invited to take part via email and in person. The invitations stated the purpose of the research and that participants could choose whether or not to take part. Participants felt more comfortable sharing their views and experiences because of this personal approach. The sample included principals from urban, semi-urban and rural schools in order to obtain diverse perspectives.

Before each interview, the individual gave their informed consent. They knew everything about the purpose of the study, how they would participate and how the data would be handled. The consent process also stated that participants could withdraw from the research process at any time if they felt uncomfortable, without consequences. This ethical approach made the study transparent and protected participants' rights.
The interviews were conducted between April 2025 and May 2025, either in person in a calm and friendly atmosphere in the classroom or online via Zoom, depending on participants' preferences and availability. During each interview, educators had 30 to 45 minutes to reflect on and discuss their experiences. The semi-structured format facilitated the monitoring of study themes while allowing a natural conversation.

To ensure analytical accuracy, all interviews were audio-recorded with participants' consent. Verbatim transcription of the audio preserved participants' tone and meaning. To protect confidentiality, all names and identifying information were replaced with pseudonyms. The researcher was the only person who could access the data because they were password-protected. This careful handling of the data kept the research confidential and honest.

Data analysis

Thematic analysis, a technique for identifying, examining, and interpreting patterns in qualitative data, will be used to analyze the data of the present study, as it provides a flexible yet systematic framework that allows for the identification of patterns of meaning, experiences, and viewpoints expressed by the participants. According to the model proposed by Braun and Clarke (2006), the process of thematic analysis is distinguished into six phases. In the first stage, "familiarization with the data" is undertaken, during which the recorded files resulting from the implementation of the semi-structured interviews were transcribed. The transcription texts were studied carefully to achieve an in-depth familiarity with their content and to perceive the general tone of the participants' narratives, allowing for an initial recording of ideas regarding possible points of interest.

Subsequently, the phase of "generating initial codes" was undertaken, during which selected excerpts considered significant in relation to the research questions of the study were identified and formalized into codes. These codes functioned as concise labels capturing the ideas and perspectives expressed by the participants. Following the coding process, the codes were grouped into "preliminary themes," aiming to identify broader categories of meaning that encompassed the identified codes. This was followed by the phase of "reviewing themes," during which the preliminary themes were systematically compared with the transcribed excerpts and the entire dataset to ensure internal coherence, validity of content, and sufficient supporting data for each theme. Subsequently, the phase of "defining and naming themes" was conducted, during which each theme was assigned a clear and concise title that accurately reflected its core meaning. In the final phase, "producing the final report," the finalized themes were integrated into the presentation of the study's results. In this narrative, each theme is presented in detail, outlining its central meaning and supported by representative excerpts from the interviews, thereby ensuring the substantiation of interpretations and conclusions. The organization of codes, themes, and excerpts was facilitated through the use of spreadsheet software (Microsoft Excel) in order to maximize transparency and systematic analysis.

Ethical dilemmas

Participation in this study was entirely voluntary and each participant had the freedom to withdraw at any time without any explanation or consequence. This method ensured that everyone felt safe and free to say what they really thought, knowing that they were there only because they wanted to be. The voluntary nature of participation was also consistent with the

ethical principles of qualitative research, which emphasize the importance of respecting people and their freedom of choice throughout the process.

In all cases, anonymity and confidentiality were strictly maintained. Names or other identifying information were not recorded in the final minutes or reports. Instead, each participant was given a pseudonym to keep their identity safe. The data collected did not include sensitive personal information, focusing exclusively on participants' professional perspectives and experiences regarding Artificial Intelligence in school administration. This meticulous attention to privacy shows that the researchers are committed to following the rules of the General Data Protection Regulation (GDPR) and conducting research in an ethical manner.

To keep the information secure, all recordings, transcripts and other related files were stored in encrypted, password-protected digital folders accessible only to the researcher. To protect participants' privacy, all raw data will be permanently deleted after completion of the research. Participants were also informed that they could request a summary of the study's findings once the research was completed. This final stage makes things more transparent and fair by allowing participants to see how their contribution helped shape the study's conclusions.

Results and thematic analysis

Benefits of utilizing AI in school administration

Participants recognized that Artificial Intelligence can reduce bureaucratic effort and improve efficiency in effective school management. The main sub-themes were time saving, automation of repetitive tasks and better organization and communication.

"Mainly by reducing bureaucracy. We spend several hours drafting reports, for example… a job that could be done automatically!" (P1)

"Report generation, organizing meetings, monitoring absences — all faster." (P3)

"Its supportive role could be like… a calendar… That is, to remind tasks, manage communication with parents, schedule, and possibly analyze attendance patterns." (P2)

Participants viewed Artificial Intelligence as a potential future assistant, not as a replacement. They believed it could perform routine bureaucratic/administrative tasks such as drafting reports, entering data and drawing up timetables. They also linked this efficiency to higher quality teaching, as it would save time for pedagogical engagement.

Challenges and obstacles

Although they are aware of the benefits, educators expressed various concerns regarding the utilization of Artificial Intelligence in school administration. The biggest problems were the lack of infrastructure, unreliable technology and fear of dependence on technology.

"The main challenge is reliability — what happens if the system crashes? And limited resources in rural areas." (P6)

"Lack of trust and fear of technology among older staff." (P4)

Participants talked about the possibility that differences in technology between urban and rural schools could create digital divides. They also expressed concerns about the potential problems Artificial Intelligence could cause and how difficult it would be to fix them.

Need for digital training

All respondents agreed that Artificial Intelligence technology should not be used until they have received systematic and practical training. Some participants stated that they felt very confident with technology (P3, P5), while others stated that they were not very confident (P2, P4, P6). But all participants emphasized how important institutional support is.

"I feel I have moderate knowledge. Yes, I do have some comfort with computers, but Artificial Intelligence is an entirely new field for me. I would need examples from everyday practice for guidance." (P1)

"I do not feel adequately prepared. I use technology on a daily basis, but not something as advanced as Artificial Intelligence." (P2)

"I have less confidence. I would need time and support to adapt." (P4)

"I'm not sure… our school does not have the appropriate equipment." (P6)

Participants also emphasized the need for continuous technical support, especially from the local education authority or from designated technology coordinators. The importance of practical experience, as opposed to academic lectures, was highlighted as the most effective approach.

Ethical and legal concerns

Participants were concerned about privacy, security of personal information, openness and accountability. Some of the participants spoke directly about the General Data Protection Regulation (GDPR) framework, while others spoke about "confidentiality" or "control of information".

"If Artificial Intelligence makes a mistake, who is responsible? That is my biggest concern." (P4)

"Transparency. How can we know exactly how algorithms process information? That is the biggest concern I have…". (P5)

Because of these responses, there may be an underlying conflict between enthusiasm for new ideas and fear of loss of control and uncertainty about ethical issues. Those who took part stated that they wanted clear national or institutional rules that would define how data are handled and how people are held accountable.

The vision of the school of the future

Most participants who were asked to imagine a future where Artificial Intelligence (AI) would be used in school administration envisioned a balanced and human-centred model. In this model, technology would assist educators in the classroom rather than take their place.

"An 'intelligent' school, where technology simplifies daily tasks but people remain at the centre and dominate. Technology does not swallow us up…" (P5)

"A school where technology quietly helps in the background, allowing teachers to focus on students." (P6)

This approach suggests a nuanced understanding: the interviewees did not show either clear enthusiasm or aversion towards technological progress related to artificial intelligence. They believed that AI can be a useful partner that would, in the long run, allow them to devote more time to creative teaching and communication with students and parents, provided that there are ethical safeguards and professional independence.

Discussion

Alignment with Technology Acceptance Models (TAM & UTAUT)

One of the key findings of this research was that most educators believed that Artificial Intelligence can be valuable for the operation of a school, especially because it could reduce bureaucracy, save time and make routine tasks more accurate (Davis, 1989). This is similar to Davis' Technology Acceptance Model (TAM), which states that perceived usefulness is a significant reason why people adopt new technology such as artificial intelligence. Participants such as P1 and P3 stated that Artificial Intelligence could "generate reports automatically" or "make everyday operations faster". This shows that they believed it would be very useful in addressing real administrative difficulties (Venkatesh et al., 2003; Mandal & Mete, 2023).

The second important part of TAM is how easy it is to use. Participants' concerns about feeling unprepared or inadequately trained showed this. Participants repeatedly emphasized how important it was to have practical training, clear guidelines and ongoing support. These needs are quite similar to what TAM says: people are more likely to use new technologies when they feel confident that they can use them. (Mailizar, Almanthari & Maulina, 2021).

The findings show a strong correlation with UTAUT. Participants emphasized how important it is to make things easier for schools, such as stable Internet access, adequate equipment and support from the Education Directorate. For example, P2 and P6 stated that Artificial Intelligence would be "theoretical" and difficult to use in rural areas without the appropriate infrastructure. This supports UTAUT's claim that environmental and organizational factors have a major impact on how people use technology. Social influence also played a small role: educators wanted clear instructions from the Ministry and wanted to know what their colleagues expected of them. This shows how expectations and norms influence people's intentions (Neofotistos & Karavakou, 2018).

Connection with the Theory of Diffusion of Innovations

The results are also quite similar to Rogers' Theory of Diffusion of Innovations, which focuses on the importance of perceived benefits, compatibility, complexity, trialability and observability. The idea of relative advantage is evident in how educators often talk about Artificial Intelligence as useful, time-saving and efficient. On the other hand, problems with transparency, errors and human control show that people still believe that technology is complex and not fully compatible with how they experience their everyday lives (Rogers, 2003).

Participants such as P5 argue that teachers should first "experiment in a safe environment". This is linked to trialability, which is the ability to test a new technology before fully adopting it (Selwyn, 2019). They also talked about observability and stated that they wanted to see real-life examples of successful use of Artificial Intelligence in Greek schools. The presence of these data supports Rogers' (2003) claim that adoption rates increase when users can observe tangible benefits and assess alignment with their needs.

The results show that school principals in Greece believe that Artificial Intelligence (AI) could be effective in basic education, but the technology is still in its early stages. Schools will only be able to adopt it if they can demonstrate real improvements and address ethical issues (OECD, 2021).

Ethical and legal approaches

The research highlights important ethical challenges associated with the integration of artificial intelligence into educational settings, particularly in terms of privacy, data security and algorithmic transparency. The findings of this study offer many elements that confirm these concerns. Participants were very aware of how sensitive student information is and therefore repeatedly asked how Artificial Intelligence systems handle, store and protect the data.

Research conducted by UNESCO (2021) and the European Commission (2019) emphasizes the importance of Artificial Intelligence in schools that adheres strictly to ethical criteria, particularly with regard to compliance with the General Data Protection Regulation (GDPR, 2016). Participants' reflections indicate that they are cautious and even reserved. They were concerned about who would be responsible if AI makes mistakes, how data would be maintained and whether algorithms would operate in a fair and transparent way. These issues are in line with current debates in education about whether algorithms should be accountable and whether humans should remain responsible (Williamson & Eynon, 2020).

The results also show a desire to keep the education system human-centred. Educators spoke extensively about how important it is to maintain control, ensure that human judgment continues to play a significant role and prevent artificial intelligence from obstructing human interactions. This is consistent with ethical frameworks that emphasize human dignity, the autonomy of educators and non-mechanized decision-making in environments that foster learning (Gocen & Aydemir, 2020; Williamson & Eynon, 2020).

Teachers' professional identity and human-centred practice

It is important to note that the results of this study provide a significant narrative concerning the emotional and professional aspects of administrative functions, even though the literature recognizes educators' concerns about automation. More specifically, a significant segment of the educational community appears cautious towards Artificial Intelligence, acknowledging their limited knowledge, the need for professional development, and the absence of clear planning for the use of Artificial Intelligence tools in approaching instructional content (Wang & Cheng, 2021).

At the same time, teachers were worried not only about learning a new tool, but also about the ways in which artificial intelligence could potentially change the culture and connections that exist in schools. This human-centred approach adds complexity to the current study, highlighting the fact that administrative tasks, even though they are routine, contribute to educators' sense of responsibility and connection with their school community (Selwyn, 2019).

The emphasis on maintaining "human contact", which was repeatedly highlighted across all interviews, provides evidence that educators perceive technology not only as a tool for increase efficiency but also as something that must be aligned with educational principles. A characteristic that is sometimes overlooked in studies focusing exclusively on policy or technology is demonstrated here, showing that professional identity plays a role in how educators evaluate innovations. This contributes to expanding the current body of literature (Gocen & Aydemir, 2020).

Infrastructure, geographical inequalities and Socio-Demographic Variations

The findings of the study are also relevant, as they demonstrate how the weaknesses of each region can have an impact. The literature agrees that infrastructure constitutes a significant obstacle. Nevertheless, the geographical inequalities within the Prefecture of Larisa- especially between urban and rural schools- highlight inequalities that directly affect readiness to utilize artificial intelligence. Principals working in remote areas emphasized that there are real constraints, such as unreliable internet and a lack of resources. This supports the notion that new technology cannot be separated from the ways in which it is used in real classroom settings (Mehdaoui, 2024).

This perspective is particularly relevant in the context of Greek education policy, which is characterized by established disparities in resources between schools. The present study underlines the need to consider both technological potential and regional equity in discussions about artificial intelligence. It achieves this by revealing the differences that exist in the specific context (Anastasopoulou et al., 2025).

At the same time, it is particularly noteworthy that a more positive attitude is observed mainly among participants with fewer years of professional experience, who appear to be better prepared for the utilization of Artificial Intelligence within the school environment. In contrast, educators with more than 15 years of professional experience reveal that they do not possess sufficient knowledge, acknowledging that they require time and appropriate support in order to become adequately prepared and expressing their hesitation. These findings reflect the limited technological proficiency of participants with many years of service—and presumably older age—compared to their younger and more highly trained colleagues, with familiarity with technology and adequate knowledge of technological tools being significantly associated with a positive attitude towards their use (Ofosu-Ampong, 2023).

Limitations of the Study

The main limitations of the present study include the small sample size (N = 6), which, in combination with the qualitative research approach, does not allow for statistical generalizations or the application of the findings to other contexts. In addition, the findings are geographically limited to the Prefecture of Larisa and therefore cannot be considered

representative of Greek primary education as a whole. Finally, the data are based on principals' self-reports, which may be influenced by subjective factors, while the possibility of socially desirable responses cannot be excluded. Despite these limitations, the study provides valuable preliminary insights and rich qualitative data that can inform future research.

Conclusions

The aim of the present study was to investigate the perceptions of primary school principals in the Prefecture of Larisa regarding the integration of Artificial Intelligence into school administration, yielding a comprehensive and nuanced understanding of their views. The research participants described Artificial Intelligence as a promising tool capable of optimizing daily operations, alleviating bureaucratic burdens and enhancing the accuracy of administrative procedures. Their reflections showed that they all agreed that Artificial Intelligence could help free up time for teaching, communication with other people and support of students, which are the most important parts of educational practice. At the same time, they emphasized that for Artificial Intelligence to be truly beneficial, it must enhance rather than replace human judgment. These insights confirm the existing literature, affirming that technology acceptance is inextricably linked to perceptions of its usefulness, ease of use and alignment with professional values.

Although there was great enthusiasm for the potential benefits, the study showed that there are significant challenges and obstacles that must be addressed before Artificial Intelligence can be successfully used in Greek primary schools. Participants were very concerned about data protection, openness, ethical responsibility and the possibility of loss of human control over decisions. Many also mentioned practical problems that could hinder its adoption, especially in rural areas. These included inconsistent infrastructure, lack of training and questions about official guidelines. These findings are consistent with theoretical frameworks such as TAM, UTAUT and the Theory of Diffusion of Innovations, which highlight that technological acceptance is influenced by personal attitudes, organizational support, environmental factors and opportunities for safe experimentation. The concerns expressed by educators show that the simple introduction of new technologies is not enough for them to work. They must be implemented in a way that is careful, responsible and well supported, and that takes into account both ethical principles and the realities of school life. The findings of this study indicate that the effective integration of Artificial Intelligence into school administration will depend on the creation of appropriate conditions, including adequate infrastructure, accessible professional development, clear policies and strong ethical safeguards.

Principals are open to new ideas when they feel prepared, supported and confident that technology will help them do their jobs better rather than hinder them. This means that policymakers and school leaders must invest in plans that include training, protection of students' privacy and ensuring that all students have equal access in all school environments.

Although the study examined only a small number of individuals, it provides us with useful information that can help us make decisions at local and national level and guide future research. Artificial Intelligence could greatly improve school administration, but it will only work if it is used carefully and with a focus on students' well-being, the autonomy of principals and the importance of human relationships.

References

Anastasopoulou, E., Gkika, K., Tsagri, A., Travlou, C., Spanou, A., &Katsivelou, V. (2025). ICT in Greek Primary Education: A Literature Review. *Asian Journal of Education and Social Studies*, 51(6), 959-73. https://doi.org/10.9734/ajess/2025/v51i62049

Bengtsson, M. (2016). How to plan and perform a qualitative study using content analysis. *Nursing Plus open*, 2, 8-14.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–339. https://doi.org/10.2307/249008

Ertmer, P. A., & Ottenbreit-Leftwich, A. T. (2010). Teacher technology change: How knowledge, confidence, beliefs, and culture intersect. *Journal of Research on Technology in Education, 42*(3), 255–284. https://doi.org/10.1080/15391523.2010.10782551

European Commission. (2019). *Ethics guidelines for trustworthy AI*. Available on the website: https://ec.europa.eu/futurium/en/ai-alliance-consultation.1.html

GDPR. (2016). *General Data Protection Regulation* (EU 2016/679).

Gocen, A., & Aydemir, F. (2020). Artificial intelligence in education and schools. *Research on Education and Media*, 12(1), 13-21. https://doi.org/10.2478/rem-2020-0003

Holmes, W., Bialik, M., & Fadel, C. (2019). *Artificial Intelligence in Education: Promises and Implications for Teaching and Learning*. Center for Curriculum Redesign.

Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. (2016). *Intelligence Unleashed: An Argument for AI in Education*. Pearson.

Mandal, R., & Mete, D. J. (2023). Teachers' and students' perception towards integration of artificial intelligence in school curriculum: a survey. *International Journal of Multidisciplinary Educational Research,* 12*(7),* 5. https://www.researchgate.net/publication/372941614_TEACHERS

Mailizar, M., Almanthari, A., & Maulina, S. (2021). Examining teachers' behavioral intention to use E-learning in teaching of mathematics: An extended TAM model. *Contemporary educational technology, 13*(2), ep298.https://doi.org/10.30935/cedtech/9709

Mehdaoui, A. (2024). Unveiling Barriers and Challenges of AI Technology Integration in Education: Assessing Teachers' Perceptions, Readiness and Anticipated Resistance. *Futurity Education*, *4*(4), 95-108.https://doi.org/10.57125/FED.2024.12.25.06

Neofotistos, V. & Karavakou, V. (2018). Factors Influencing the Use of ICT in Greek Primary Education. *Open Journal for Educational Research, 2*, 73-88. https://doi.org/10.32591/coas.ojer.0202.02073n

OECD. (2019). *Education at a Glance 2019*. https://www.oecd.org/en/publications/education-at-a-glance-2019_f8d7880d-en.html

OECD. (2021). *Digital Education Outlook 2021: AI in Education*. https://digital-education-outlook.oecd.org

Ofosu-Ampong, K. (2023). Gender differences in perception of artificial intelligence-based tools. *Journal of Digital Art & Humanities, 4*(2), 52-56. https://doi.org/10.33847/2712-8149.4.2_6

Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.

Russell, S., & Norvig, P. (2021). *Artificial Intelligence: A Modern Approach* (4th ed.). Pearson.

Selwyn, N. (2019). *Should robots replace teachers? AI and the future of education*. Polity Press.

UNESCO. (2021). *AI and Education: Guidance for Policy-makers*.

UNESCO. (2023). *Education and Artificial Intelligence: Global Landscape Report*.

Van Dijk, J. (2020). *The Digital Divide*. Polity Press.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425–478. https://doi.org/10.2307/30036540

Wang, T., & Cheng, E. C. K. (2021). An investigation of barriers to Hong Kong K-12 schools incorporating Artificial Intelligence in education. *Computers and Education: Artificial Intelligence, 2*, 100031.https://doi.org/10.1016/j.caeai.2021.100031

Williamson, B., & Eynon, R. (2020). Historical Threads, Missing Links, and Future Directions in AI in Education. *Learning, Media and Technology, 45*, 223-235. https://doi.org/10.1080/17439884.2020.1798995

Promoting Sustainable Values Through Collaborative Learning in a Primary School Erasmus+ Project

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Abstract

This article presents the implementation and impact of a short-term Erasmus+ KA201-SCH-061945 project entitled “Act Local, Think Global”, conducted in a Greek primary school with 4th-grade pupils. The program focused on promoting environmental awareness and sustainable behaviors through collaborative learning, intercultural exchange, and digital tools. Through partnerships with schools from Finland, Spain and Whales, students explored topics related to plastic pollution, circular economy, and everyday ecological actions. Activities included virtual exchange, co-creation of e-books, art-based expression, and participation in an international eTwinning campaign. The methodological approach emphasized project-based learning, constructivist principles, and the use of digital platforms such as Twinspace, Canva, and Padlet. Results showed increased student engagement, development of key competences, enhanced cultural understanding, and long-term impact on the school culture. The article reflects on challenges, findings, and recommendations for other schools aiming to integrate Erasmus+ opportunities into their everyday educational practice.

Keywords: Erasmus+, collaborative learning, primary education, environmental awareness, international partnership

Introduction

In recent years, European Union educational policies have strongly promoted inclusive, innovative, and sustainable learning environments across member states. One of the most dynamic tools supporting this transformation in schools is the Erasmus+ programme, which encourages cross-border collaboration, intercultural awareness, and the development of key competences for lifelong learning. Especially in the context of primary education, where foundational skills and attitudes are formed, Erasmus+ offers opportunities for young learners to engage in experiential, socially meaningful, and cooperative projects.

This article presents the case of a short-term Erasmus+ KA201-SCH-061945 project titled “Act Local, Think Global”, implemented in a Greek public primary school with the active involvement of fourth-grade pupils and teachers. The project addressed critical environmental issues such as plastic pollution and the circular economy, embedding them within a broader pedagogical framework that emphasized sustainability, active citizenship, and European identity.

The global environmental crisis and the European Green Deal have amplified the need for educational action that empowers students to understand and address real-world challenges. Within this context, the project aimed to cultivate environmental responsibility and critical thinking through collaborative learning experiences and digital tools. It sought to connect children from diverse cultural backgrounds and enable them to co-create solutions for a more sustainable future.

Furthermore, the school's participation in Erasmus+ was part of a broader effort to internationalize its curriculum, enhance digital pedagogical practices, and involve the wider school community. The outcomes of the project, both cognitive and effective, are of particular interest to educators seeking to align classroom practices with 21st-century competences and global educational priorities.

This article explores how the implementation of this Erasmus+ initiative served as a catalyst for pedagogical innovation, intercultural learning, and student empowerment. It examines the teaching strategies applied, the tools employed, the learning outcomes observed, and the overall impact on school culture and teacher development.

Literature Review

The Erasmus+ programme, as part of the European Union's strategic framework for education and training, is widely acknowledged for its role in fostering innovation, inclusion, and transnational cooperation in schools (European Commission, 2020). Research has highlighted that participation in international school partnerships enhances not only pupils' intercultural competence but also contributes to teacher professional development and school improvement (Kirkwood-Tucker, 2012; Redecker, 2017). These benefits are even more profound when the programme is implemented through collaborative and project-based learning approaches, especially in primary education.

Collaborative learning, a pedagogical model rooted in social constructivism, posits that learners construct knowledge actively and meaningfully through interaction with others (Vygotsky, 1978; Dillenbourg, 1999). In a classroom environment enriched by peer collaboration and shared goals, students become co-constructors of knowledge. This dynamic is especially relevant in international Erasmus+ projects, where learners not only work with peers from different classrooms but also from different countries and cultures, enhancing both cognitive and socio-emotional learning (Johnson & Johnson, 2009).

Equally important is the role of education for sustainable development (ESD) in today's curriculum. UNESCO (2017) emphasizes that ESD must empower learners of all ages to make informed decisions and take responsible actions for environmental integrity, economic viability, and social justice. Embedding sustainability into cross-curricular learning, especially at the primary level, nurtures eco-literacy and citizenship from an early age. Research supports the view that when sustainability is taught through real-life projects and active participation, children internalize values and behaviors more effectively (Brundiers et al., 2010; Tilbury, 2011).

Furthermore, the integration of digital technologies in Erasmus+ projects has been recognized as a key enabler of meaningful communication, creativity, and inclusion (Redecker, 2017). Platforms like Twinspace, Canva, and Padlet support asynchronous and synchronous collaboration, enabling even young learners to engage in multilingual, multimedia, and multimodal communication. Digital storytelling, for instance, has proven to enhance students' engagement and expressive abilities across linguistic and cultural boundaries (Robin, 2008).

Finally, the literature stresses the importance of teacher agency and whole-school involvement in maximizing the impact of international projects. Projects are more effective when teachers are empowered as facilitators of learning, when school leadership supports innovation, and when the entire school community (students, staff, parents) is involved in a shared educational vision (Hargreaves & Fullan, 2012; Burns, 2016).

This literature review therefore underlines the conceptual and pedagogical pillars upon which the presented Erasmus+ project was designed: collaborative learning, sustainability education, digital pedagogy, and internationalization of school practices.

Material and Methods

The Erasmus+ project "Act Local, Think Global" was implemented during the 2023–2024 school year in a public primary school in Livadia, Greece. The project was funded under the

KA201-SCH-061945, which allowed for flexible design and implementation of activities tailored to the school's needs and vision. The primary target group included 24 fourth-grade students (ages 9–10), while the teaching team consisted of three classroom teachers, an ICT specialist, and the school principal acting as project coordinator. The Greek school collaborated with three partner schools from Finland, Spain and Whales. These schools were selected based on shared interest in environmental education and collaborative digital practices. The joint project aimed to foster eco-awareness, civic responsibility, and intercultural understanding, while also enhancing key transversal competences such as creativity, digital literacy, and teamwork.

All partners agreed on a common pedagogical framework and co-designed a shared activity calendar that aligned with national curricula and school timetables. Although physical mobilities were not included due to funding constraints, virtual exchanges and online collaborative tasks formed the backbone of the project.

Learning Methodology

The pedagogical foundation of this project was grounded in constructivist and socio-constructivist theories of learning, which emphasize that knowledge is actively constructed by learners through experience, collaboration, and reflection (Dillenbourg, 1999; Johnson & Johnson, 2009). In this sense, students were not passive recipients of environmental information but active participants in a continuous process of inquiry, interpretation, and meaning-making. Learning occurred through hands-on exploration, group dialogue, and creative expression, allowing students to build connections between scientific, social, and personal dimensions of sustainability.

A project-based learning (PBL) approach framed the entire action plan, providing an authentic and purposeful context for student engagement (Brundiers, Wiek, & Redman, 2010). The project encouraged students to identify real-world environmental problems related to plastic pollution, design collaborative investigations, and propose creative solutions. This method promoted inquiry-driven discovery and deepened understanding by situating knowledge in practical, meaningful experiences rather than abstract classroom tasks.

The participatory and experiential nature of the project also aligns with the core principles of Education for Sustainable Development (ESD) as defined by UNESCO (2017). Students were guided to explore sustainability not merely as a concept but as a lived practice that connects ecological awareness, social responsibility, and ethical decision-making. Each activity was designed to help them develop systems thinking—the ability to recognize relationships and interdependencies between human behavior and environmental outcomes.

The role of the teacher shifted from that of a transmitter of information to that of a facilitator, mentor, and co-learner. The educator scaffolded learning experiences, encouraged self-expression, and ensured inclusive participation for all learners, respecting different abilities, backgrounds, and learning paces. This adaptive pedagogy supported the development of social-emotional skills, empathy, and collective problem-solving, while nurturing students' intrinsic motivation and confidence.

Moreover, the methodology incorporated collaborative learning structures, where teamwork, peer tutoring, and cooperative tasks fostered mutual support and shared accountability (Johnson & Johnson, 2009). Students worked in heterogeneous groups, promoting diversity of thought and equitable contribution. Decision-making was often student-led, reinforcing agency and autonomy—core attributes of active environmental citizenship (Huckle & Wals, 2015).

Finally, reflection and metacognition were integrated throughout the learning process. Students maintained journals, discussed challenges, and celebrated achievements, cultivating awareness of their own learning journey. Through this cyclical process of action and reflection, learners developed critical thinking and problem-solving skills while experiencing the tangible impact of their environmental actions both within and beyond the classroom.

Tools and Resources

To effectively support the participatory and project-based learning methodology, the project incorporated a carefully selected combination of digital platforms, physical materials, and community resources. These tools were intentionally chosen to promote creativity, collaboration, and cross-border interaction while also encouraging students to think critically about how technology can serve as a medium for environmental education and civic action.

At the heart of the project was the eTwinning Twinspace platform, which provided the digital infrastructure for communication, documentation, and exchange with partner schools across Europe. Twinspace enabled synchronous and asynchronous collaboration, allowing students to share their work, comment on peers' contributions, and engage in joint reflection. This safe, GDPR-compliant educational space fostered digital citizenship, intercultural dialogue, and collective responsibility (Redecker, 2017).

Complementing Twinspace, Padlet was used as an interactive tool for brainstorming, co-creation, and formative assessment. Students used Padlet boards to post ideas, reflections, and digital artifacts such as images, videos, and text responses. This visual and collaborative medium supported multimodal learning, where students could express understanding in diverse formats, enhancing inclusion and engagement (Robin, 2008). Teachers also employed Padlet to monitor progress and provide real-time feedback, ensuring active participation by all learners.

Canva, another essential tool, was introduced as a means of developing students' digital creativity and visual literacy. Through Canva, pupils designed infographics, posters, and awareness campaign materials addressing issues of plastic pollution, recycling, and climate action. The platform's user-friendly interface empowered even younger learners to become content creators, transforming abstract environmental concepts into persuasive visual narratives that could be shared both online and within the school community.

Beyond digital tools, the project integrated a variety of hands-on and locally sourced materials to connect learning with tangible, real-world experiences. These included recyclable objects, craft supplies, composting materials, and simple scientific experiment kits. Students analyzed different types of plastics, observed decomposition rates, and created art installations using discarded materials. Such experiential resources reinforced scientific inquiry, sensory engagement, and emotional connection with environmental topics (Brundiers, Wiek, & Redman, 2010).

Community-based resources also played a critical role in enriching the learning environment. Local environmental organizations and municipal waste management services were consulted for data and guidance, while parents contributed recyclable materials and participated in awareness events. These partnerships extended the educational experience beyond classroom boundaries, aligning with the whole-school and whole-community approach recommended by UNESCO (2017).

Throughout the project, technology and tangible materials functioned not as isolated tools but as integrated components of an ecosystem of learning. Each resource—whether digital or physical—was selected to enhance communication, foster creativity, and bridge the gap between individual reflection and collective environmental action. This strategic use of resources encouraged students to see technology not merely as entertainment but as a vehicle for expression, collaboration, and social change.

In essence, the integration of digital and material resources provided an inclusive, interactive, and transformative learning environment. It demonstrated how carefully designed multimodal learning spaces can amplify both environmental understanding and digital competence—two pillars essential for preparing young citizens to navigate and shape the challenges of a sustainable future.

Activities Overview

The project unfolded through a series of carefully structured phases, designed to gradually deepen students' understanding of sustainability while fostering inquiry, collaboration, and creativity. Each phase is built upon the previous one, encouraging learners to move from **awareness to action**, from **knowledge acquisition to social participation**. The overall structure reflected the cyclical nature of experiential learning, in which reflection, experimentation, and adaptation are integral components of the educational process (Kolb, as cited in Brundiers, Wiek, & Redman, 2010).

Phase 1: Awareness and Exploration

The first phase focused on building students' awareness of environmental challenges, particularly the issue of plastic waste. Teachers introduced the topic through videos, photographs, and interactive discussions that invited students to reflect on their daily habits and their relationship with consumption and waste.

A classroom survey entitled "What Rubbish Do I Throw Away?" served as an entry point for inquiry. Students collected and categorized their own household waste for a week, then analyzed the data collectively using simple graphs and charts. This activity not only promoted mathematical reasoning but also initiated critical conversations about personal responsibility, overconsumption, and recycling behaviors.

By connecting everyday experiences with broader ecological concerns, students began to perceive environmental issues as part of their own lives—a fundamental step in cultivating environmental citizenship (Huckle & Wals, 2015).

Phase 2: Research and Investigation

Building on the insights from the first phase, learners engaged in guided research to explore the life cycle of plastics, their environmental impact, and the global dimension of pollution. They consulted online resources, short articles, and educational videos tailored to their age group.

Particular emphasis was placed on understanding the European Union's environmental policies and the European Green Deal (European Commission, 2020), simplified through visual aids and teacher-facilitated discussions.

Hands-on experiments—such as comparing the decomposition of organic and synthetic materials—allowed students to observe scientific phenomena directly, reinforcing curiosity and scientific thinking.

Collaborative inquiry journals were used to record hypotheses, observations, and reflections, fostering metacognition and ownership of learning.

Phase 3: Creation, Communication, and Collaboration

The third phase marked a transition from exploration to expression. Students were encouraged to communicate their understanding and emotions through creative and collaborative projects that integrated art, science, language, and digital technology. Working in small, mixed-ability teams, they produced a variety of outputs:

- **An environmental newspaper**, featuring articles, interviews, and cartoons promoting sustainability.
- **A board game**, designed with Canva, combining environmental trivia and challenges to teach peers about recycling and climate change.
- **Posters and infographics**, addressing the dangers of single-use plastics and suggesting eco-friendly alternatives.
- **Short digital presentations** on Padlet, showcasing students' messages and reflections to partner schools abroad.

Through these creations, students not only developed digital competence (Redecker, 2017; Robin, 2008) but also honed communication, teamwork, and critical thinking skills. The process was interactive and reflective—students revised their work based on peer feedback, cultivating a collaborative and growth-oriented learning culture.

Phase 4: Action and Community Engagement

The final phase translated classroom learning into real-world action. Students organized and participated in a clean-up campaign at a nearby park and coastal area, collecting and categorizing waste while documenting their findings with photos and digital reports. The event was coordinated with local municipal authorities, who provided logistical support and environmental insights.

Following this, students led a school-wide awareness event where they presented their projects to peers, parents, and teachers. They displayed their posters, demonstrated their board game, and distributed leaflets designed to inspire responsible environmental behavior.

This culminating activity represented a powerful synthesis of cognitive, emotional, and social learning. It not only reinforced the principle of "learning by doing" but also empowered students to act as ambassadors of change in their school and local community—an essential outcome of education for sustainable development (UNESCO, 2017).

Across all phases, the emphasis remained on active participation, reflection, and shared responsibility. Students experienced sustainability as a living practice rather than a theoretical concept. The sequence of activities, scaffolded by digital tools and creative tasks, provided multiple entry points for learners with diverse interests and abilities, ensuring inclusivity and engagement throughout the process.

Ultimately, the activities nurtured not only environmental awareness but also the values, attitudes, and competencies that define responsible global citizenship—empathy, cooperation, critical reflection, and the courage to act.

Ethical Considerations

Ethical integrity was a central pillar of the project's design and implementation, ensuring that all educational activities aligned with both the school's internal policies and the ethical standards promoted by the European eTwinning and Erasmus+ frameworks. The project aimed to create a safe, inclusive, and respectful learning environment where every student could participate meaningfully and confidently, while their privacy, identity, and dignity were fully protected.

Before the commencement of the project, written informed consent was obtained from parents or guardians for all students participating in project activities, including consent for limited use of anonymized photos, creative outputs, and digital materials. Clear communication was established with families to explain the educational objectives, digital tools used, and data protection measures in place. This process ensured transparency and trust between the school and the wider community.

All online interactions and digital exchanges took place through secure, GDPR-compliant platforms, primarily eTwinning's Twinspace, which provides a controlled and closed educational environment accessible only to authorized users. The use of such platforms ensured that student data were protected according to European privacy regulations and that participation occurred within safe, moderated spaces (European Commission, 2020).

Special attention was given to inclusivity and equitable participation. Activities were designed to accommodate different learning styles, abilities, and language levels, ensuring that every student had a meaningful role and could contribute according to their strengths. This inclusive design reflected the project's core ethical value: education as a right and opportunity for all learners, regardless of academic, social, or cultural background (UNESCO, 2017).

Throughout the project, the teacher assumed the dual role of facilitator and ethical guardian. Classroom discussions emphasized mutual respect, empathy, and collaborative responsibility, particularly when addressing sensitive topics such as pollution, climate change, and human impact on nature. Students were encouraged to express their opinions freely while respecting the views of others—an essential aspect of democratic and intercultural education (Huckle & Wals, 2015).

In addition, the project's documentation and dissemination practices adhered strictly to ethical publication standards. All materials shared on the Twinspace, school website, or local media were anonymized, and no personal data (such as names or identifiable images) were made public. The emphasis was placed on showcasing the collective learning process and outcomes rather than individual identities.

Finally, ethical reflection was intentionally embedded as part of the learning process itself. Students discussed the meaning of responsible digital behavior, environmental stewardship, and respectful communication, linking personal ethics to sustainability ethics. This dual focus—on ethical conduct and environmental values—helped shape students' understanding of what it means to act responsibly, both online and in the real world.

Results and Discussion

The implementation of the sustainability action plan yielded significant educational, social, and emotional outcomes. The project "Act Local, Think Global" proved to be a catalyst for transformative learning experiences, fostering not only environmental literacy but also collaboration, empathy, and a shared sense of responsibility among young learners. The results demonstrate that participatory environmental education can profoundly influence students' attitudes, competences, and behaviors, especially when embedded in real-world contexts and facilitated through creative and digital pedagogies.

From the outset, student engagement was exceptionally high. Learners showed enthusiasm for taking ownership of their projects, often extending their participation beyond classroom time. The open-ended and inquiry-based design allowed them to pursue personal interests within the broader environmental theme, such as researching marine life, renewable energy, or recycling practices at home. This freedom of exploration enhanced student agency, an essential element in environmental citizenship (Huckle & Wals, 2015).

As students designed their posters, digital campaigns, and environmental newspaper, they transitioned from being recipients of knowledge to becoming creators and communicators of sustainability messages. This creative expression not only improved their self-confidence but also helped them internalize environmental values through personal voice and collaboration. Many students began to advocate for waste reduction and recycling within their families, demonstrating transfer of learning from school to home life—a hallmark of meaningful education (Brundiers, Wiek, & Redman, 2010).

Moreover, the sense of shared purpose cultivated in the classroom empowered students to see themselves as capable of influencing others. They began to perceive learning as an active process of participation in their community rather than a passive academic task, aligning with the transformative ideals of Education for Sustainable Development (ESD) (UNESCO, 2017).

Beyond individual learning, the project had a broader institutional and community impact. Teachers and students from other classes became inspired to initiate their own environmental mini-projects, such as classroom recycling systems and school garden improvements. This diffusion of practice demonstrated how one classroom initiative can spark systemic change, leading to a more sustainable and participatory school culture (Mannion, Biesta, Priestley, & Ross, 2011).

Parents also played a vital role in sustaining the project's momentum. Many reported adopting new household habits, such as waste separation and reusing materials, as a direct influence of their children's participation. The community clean-up campaign and school

exhibition served as visible symbols of student leadership, engaging families, local authorities, and media representatives. The project thus became a bridge between school and society, strengthening community bonds and promoting collective responsibility for environmental well-being.

This community-oriented dimension echoes the whole-school and whole-community approach recommended by UNESCO (2017), where education serves as both a personal and social transformation tool. It illustrates that sustainability education, when participatory and action-based, can extend learning beyond institutional walls into everyday life.

While the project outcomes were largely positive, several challenges provided valuable learning opportunities. One recurring difficulty involved balancing curriculum requirements with the time demands of extended project work. Teachers mitigated this by integrating sustainability topics across subjects—language, science, and art—thus achieving cross-curricular cohesion rather than viewing the project as an add-on activity.

Digital literacy disparities among students also presented a challenge, particularly at the beginning. Peer mentoring strategies proved effective in addressing this issue, fostering collaboration and mutual support (Johnson & Johnson, 2009). Another consideration was the need to maintain focus during online interactions, as the novelty of digital platforms sometimes led to distraction. Structured tasks, clear deadlines, and reflection activities helped sustain purposeful engagement.

Finally, the most significant lesson learned was that student-driven learning requires trust. Allowing learners to make choices, voice opinions, and take responsibility may introduce unpredictability, but it also nurtures ownership, creativity, and resilience. When students experience that their ideas matter, motivation and learning outcomes rise dramatically.

Student Learning Outcomes

One of the most significant outcomes was the increase in environmental literacy and awareness among students. By engaging with real-world issues such as plastic waste and sustainable consumption, pupils developed a concrete understanding of environmental challenges and solutions. For example, during the “Plastic-Free Week Challenge,” students demonstrated initiative by suggesting eco-friendly alternatives at home and sharing their findings with peers from partner schools.

Equally important was the development of collaborative competences. Students learned to communicate effectively, negotiate roles, and work in diverse teams. In the joint creation of the digital storybook *“The Journey of a Plastic Bottle,”* pupils practiced not only storytelling and artistic expression, but also negotiation, responsibility-sharing, and problem-solving — key elements of successful collaborative learning (Dillenbourg, 1999; Johnson & Johnson, 2009).

Moreover, the project enhanced digital literacy and media skills. Children became familiar with online tools, practiced safe and ethical digital behavior, and expressed themselves creatively through multimedia. For many students, this was their first exposure to cross-border digital collaboration, and it built confidence in using technology for authentic purposes beyond the classroom.

Teacher Development and School Culture

Teachers involved in the project reported a renewed sense of professional motivation and pedagogical experimentation. The opportunity to design interdisciplinary tasks, experiment with student-centered strategies, and connect with colleagues abroad served as a form of informal professional learning. As Hargreaves and Fullan (2012) argue, meaningful change in schools often begins with teacher agency and collaborative innovation — conditions clearly cultivated during this project.

At the school level, the project functioned as a catalyst for cultural transformation. Classroom walls became digital windows to Europe, and students began to perceive

themselves not just as Greek pupils, but as active European citizens with shared responsibilities and values. The final dissemination event, which included presentations to parents and local stakeholders, reinforced the sense of collective pride and ownership over the learning process.

Family and Community Engagement

The program also succeeded in bridging the gap between school and home. Parents reported that children discussed project topics at home and even initiated sustainable actions, such as starting recycling stations or proposing eco-friendly shopping. This aligns with the findings of Brundiers et al. (2010), who note that real-world sustainability projects can extend their impact beyond classroom boundaries.

Challenges and Reflections

Despite the many strengths, some challenges emerged. Language barriers required scaffolding, especially in virtual exchanges. Teachers had to dedicate extra time to planning and coordinating across schools and time zones. Technical limitations, such as internet connectivity or familiarity with platforms, occasionally interrupted activities. However, these obstacles were addressed through peer support and flexibility, turning challenges into learning opportunities.

Recommendations

Based on the implementation and outcomes of the "Act Local, Think Global" Erasmus+ project, a number of recommendations can be offered for educators, school leaders, and policymakers seeking to integrate international collaborative projects into primary education. These recommendations address both pedagogical practice and system-level strategies.

For Classroom Practice

- Embed sustainability in everyday teaching: Environmental education should not be treated as an isolated subject. Teachers are encouraged to integrate sustainability themes across subjects — from language arts and science to mathematics and art — using cross-curricular projects that reflect real-world challenges.
- Foster student voice and agency: Children should not be passive recipients of content but active contributors to the learning process. Allowing students to shape project tasks, select tools, and reflect on outcomes empowers them as learners and citizens.
- Use collaborative digital tools meaningfully: Platforms like Twinspace, Canva, and Padlet offer powerful opportunities for cooperation, but their use should be purposeful and tied to clear learning outcomes. Simple but structured activities (e.g., co-writing, idea boards, online galleries) are often more effective than complex technical setups.
- Provide scaffolding for language and inclusion: In multilingual, multicultural Erasmus+ contexts, it is vital to offer differentiated materials, visual support, and peer assistance. All learners — regardless of ability or background — must have access to meaningful participation.

For School Leadership and Development

- Integrate Erasmus+ into the School Development Plan: International projects should be aligned with the school's vision, annual planning, and teacher training goals. This ensures continuity, institutional support, and sustainability beyond the duration of individual projects.
- Promote whole-school involvement: Success is greater when Erasmus+ is not a "teacher's project" but a school-wide endeavor, involving colleagues from different disciplines, non-teaching staff, and the broader community. Dissemination events, exhibitions, and open lessons can strengthen this culture.

- Establish peer-learning networks: Schools new to Erasmus+ can benefit greatly from collaboration with more experienced ones. National support services and platforms like eTwinning can serve as hubs for mentoring and capacity-building among educators.

For Educational Policy and Research

- Recognize Erasmus+ as a tool for teacher professional learning: Policymakers should acknowledge the transformative potential of Erasmus+ not only for students, but also for teachers. Participation should count as part of formal or informal professional development and be supported institutionally.
- Encourage research on student outcomes in international projects: While teacher benefits are well documented, further empirical research is needed to measure the impact of Erasmus+ on primary pupils' values, skills, and attitudes — particularly in relation to sustainability and citizenship.
- Bridge national curriculum goals with European priorities: Educational reforms should seek synergies between national learning outcomes and European strategies (e.g., SDGs, Green Deal, Digital Education Action Plan), using Erasmus+ as a practical framework for implementation.

Conclusion

The Erasmus+ project "Act Local, Think Global" provided compelling evidence that even short-term international collaborations can serve as powerful catalysts for pedagogical renewal, environmental awareness, and intercultural understanding in primary education. By engaging fourth-grade pupils in meaningful, real-world learning experiences across national borders, the project not only enriched their cognitive and social development, but also laid the groundwork for a more participatory and globally minded school culture.

Central to the success of the initiative was the use of collaborative learning methodologies, which allowed students to work in teams, co-create knowledge, and develop empathy through dialogue with their European peers. The constructivist foundation of the project enabled learners to become agents of change in their own contexts — proposing solutions, leading activities, and reflecting critically on their roles as young citizens.

Moreover, the integration of digital tools provided access, inclusivity, and creative expression, transforming classrooms into dynamic spaces of virtual connection and co-production. The project reaffirmed that digital media, when used thoughtfully, can bridge distances and democratize learning.

Teachers, too, experienced professional growth, discovering new ways to engage learners and expand their pedagogical toolkit. The collaborative planning, reflection, and innovation embedded in the Erasmus+ process revitalized their practice and reinforced the school's commitment to continuous improvement.

While challenges related to language, logistics, and infrastructure were present, they were met with flexibility, peer support, and a shared sense of purpose. These challenges, in turn, became opportunities for deeper learning and resilience.

In conclusion, this case study illustrates how Erasmus+ can be leveraged not merely as a mobility programme, but as a strategic framework for educational transformation. It calls upon schools, policymakers, and stakeholders to embrace international cooperation as an integral part of 21st-century education — one that is sustainable, inclusive, and profoundly human. This action plan affirmed that young learners can be powerful agents of change when provided with authentic learning opportunities, supportive guidance, and the tools to connect their local actions with global goals. It reinforced the idea that sustainability is not an additional subject but a holistic educational lens that integrates knowledge, values, and action.

Empowering young eco-citizens, therefore, is not simply an aspiration—it is an educational imperative. It calls for schools that inspire curiosity, cultivate empathy, and equip every child with the confidence to believe that their small actions can contribute to a larger, shared vision: a sustainable and compassionate world for all.

References

Brundiers, K., Wiek, A., & Redman, C. L. (2010). Real-world learning opportunities in sustainability: *From classroom into the real world. "International Journal of Sustainability in Higher Education*, 11", 308–324.

Burns, T. (2016). *"Governing education in a complex world".* OECD Publishing.

Dillenbourg, P. (1999). What do you mean by "collaborative learning"? In P. Dillenbourg (Ed.), *"Collaborative-learning: Cognitive and computational approaches"* (pp. 1–19). Elsevier.

European Commission. (2020). *"Erasmus+ Programme Guide".* Publications Office of the European Union.

Hargreaves, A., & Fullan, M. (2012*). "Professional capital: Transforming teaching in every school".* Routledge.

Huckle, J., & Wals, A. E. J. (2015). The UN Decade of Education for Sustainable Development: Business as usual in the end. *Environmental Education Research, 21*(3), 491–505.

Johnson, D. W., & Johnson, R. T. (2009). An educational psychology success story: Social interdependence theory and cooperative learning. *"Educational Researcher, 38",* 365–379.

Kirkwood-Tucker, T. F. (2012). "Visions in global education: The globalization of curriculum and pedagogy in teacher education and schools". Peter Lang.

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice-Hall.

Mannion, G., Biesta, G., Priestley, M., & Ross, H. (2011). The global dimension in education and education for global citizenship: Genealogy and critique. *Globalisation, Societies and Education, 9*(3–4), 443–456. https://doi.org/10.1080/14767724.2011.605327

Redecker, C. (2017). "European framework for the digital competence of educators: DigCompEdu". Publications Office of the European Union.

Robin, B. R. (2008). Digital storytelling: A powerful technology tool for the 21st century classroom. *"Theory into Practice, 47",* 220–228.

UNESCO. (2017). "Education for sustainable development goals: Learning objectives". United Nations Educational, Scientific and Cultural Organization.

Investigating differentiated practices during the educational process with hearing impaired students before and after their training in differentiating teaching from IEP

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Abstract

Differentiated teaching is a fundamental educational philosophy that responds to the needs of all students, especially those with hearing impairments. The choice of this specific topic is based on current global educational trends and research findings that highlight the importance of an individualized approach to promoting inclusion and equal participation in the regular classroom. Differentiation facilitates access to knowledge, tailored to the specific needs of each student. In addition, the interest in the topic stems from the researcher's extensive teaching experience and his long-term involvement in teacher education, through the Educational Policy Institute, which provides him with substantial knowledge and understanding of the practical challenges and possibilities of implementing differentiated practices in practice. This study examined the impact of a training program on teachers' practices and shows the importance of the teacher's training. Emphasizes also the importance of equipping teachers with practical tools and strategies through structured training programs.

Keywords: Differentiated Teaching, Primary Teachers, hearing impairment, IEP

Introduction

In recent years, the concept of differentiated teaching has gained increasing attention as an essential approach for promoting inclusive education, particularly for students with hearing impairment. As education systems worldwide shift toward more student-centered and equitable practices, the need to adapt teaching strategies to meet diverse learner needs has become more pressing. This article explores differentiated practices of teachers during educational process with hearing impaired students before and after their training in differentiated teaching from IEP. Drawing on international research and the professional experience of educators actively engaged in teacher training, this work highlights the importance of systematic teacher support and training. It aims to inspire educators to critically reflect on their practice, embrace collaboration, and incorporate new technologies to enhance their instructional methods. Ultimately, it advocates for a flexible, responsive teaching model that acknowledges the uniqueness of each student—and each teacher.

Differentiated teaching

Differentiated teaching is a pedagogical approach designed to address the diverse learning needs, interests, and abilities of students within a classroom. Although widely discussed and implemented in modern education, the conceptual boundaries remain broad, often leading to varied interpretations and implementations. It is a proactive instructional approach that involves tailoring teaching methods, materials, and activities to suit individual student needs. Tomlinson (2014) defines it as a model that modifies content, process, and product based on students' readiness levels, interests, and learning preferences. The goal is to create engaging and appropriately challenging learning experiences that maximize each student's potential. Eikeland (2022) highlights that the term "differentiated teaching" is broad and often used interchangeably with other instructional strategies, making its conceptual boundaries

somewhat fluid. The various terms, rationales, and applications across different subjects and education systems contribute to the complexity of the concept. Despite this ambiguity, the core of differentiated teaching lies in its commitment to equity and inclusion in the classroom by meeting students where they are academically and emotionally. Recent studies explore both the benefits and limitations in real-world classrooms. Pozas, Letzel, and Schwab (2020) conducted a study involving secondary teachers in Germany and found that while most educators valued differentiated teaching, their practical application of it varied significantly. This variation was influenced by teachers' confidence, subject matter, time constraints, and institutional support. Smets, De Neve, and Struyven (2020) focused on how teachers develop the skills necessary for differentiated teaching through professional learning communities and ongoing training. They reported that while professional development helped teachers better assess student differences and adapt instruction, many still struggled with effectively managing diverse classroom needs simultaneously. In Indonesia, Hasanah et al. (2022) developed a conceptual model of based on teachers' experiences. This model emphasized the importance of reflective practice, contextual sensitivity, and teacher agency in implementing effective differentiation strategies. The study also reinforced that cultural context plays a critical role in shaping how differentiation is understood and practiced. The primary benefit of differentiated teaching is its focus on meeting the unique academic and social-emotional needs of each student. When teaching is personalized, students are more engaged, motivated, and successful. According to Tomlinson and Imbeau (2010), differentiated teaching cultivates a classroom culture that values diversity and fosters student confidence. Nevertheless, significant challenges remain. Teachers frequently cite time constraints, lack of resources, and large class sizes as barriers to effective differentiation (Pozas et al., 2020). Moreover differentiated teaching is also based on the concept of student motivation and interest. The student's interest is related to his attraction to specific academic subjects. Teachers, by connecting the content of their teaching with the interest of the students, make the teaching more attractive and effective. Thus, they should focus on the centers of interest and have the possibility of utilizing a variety of educational materials, ask a variety of questions to the students and, now having knowledge of their interests, organize various activities (Koutselinis, 2015). Students, on the other hand, discovering and cultivating their inclinations, create new knowledge on topics that concern them and this helps them to participate actively during the teaching. e Panteliadou, S., & Antoniou, F. (Eds.). (2023) emphasized the importance of differentiating the content according to the interest of the students, as through this process the students discover the relationship between the school and their interests, make use of the already existing knowledge and feedback their motivation for learning.

Finally, the differentiation of teaching, as far as the student is concerned, is related to his learning style or learning preference, which is adapted according to his needs and temperament as they are parameters of the personality of each student and are differentiated according to social-cultural context (Matsaggouras,2018). The student's learning style refers to the particular way in which each student learns (Koutselini&Pyrgiotakis, 2015). In this case, teaching is differentiated, taking into account individual characteristics, but also giving the student room for thought and reflection (Koutselinis, 2010). It is also essential to recognize the different culture of students and to treat children from different cultural backgrounds equally (Koutselinis, 2010). Additionally, without sufficient training, many educators feel ill-equipped to implement the necessary strategies. This highlights the need for ongoing professional development, administrative support, and collaborative planning time. Smets et al. (2020) emphasized that differentiated teaching is a skill that develops over time. Supportive school environments and mentoring from experienced educators are key to helping teachers gain competence and confidence in their differentiation practices. In the modern school classroom, since it includes a diverse student population in terms of their needs and

characteristics, it is necessary to use differentiation practices that will ensure equal learning opportunities for all.

Differentiated teaching and hearing impairment

Differentiated teaching is a vital approach in supporting students with hearing impairment. By recognizing and addressing their unique learning needs, educators can create an inclusive and equitable learning environment that promotes academic success and personal growth. Hearing impairment affects the school performance of students, leading them very often to school failure, but also in the difficulty of their socialization at school, as well the phenomenon of social exclusion is common. For this reason today, it is imperative that children with hearing impairment receive the appropriate educational support to provide equal opportunities to education. The effective teaching of students with hearing impairment presupposes, in addition to the theoretical knowledge of information concerning nature of hearing impairment, the development of skills with the aim of adapting them teaching goals and teaching tools according to their particular needs students (Vernon, M., 2006). It is a demanding process, in which the teacher must take into account, not only the subject to be taught and the student's cognitive level, but also the basic cognitive and motional characteristics of the student. In the area of Special Education, the differentiation of teaching is historically fundamental principle for the effective teaching of all students and mainly students with hearing impairment. Is currently one of the most popular practices in Special Education, which serves in teacher planning programs depending on the particularities and special educational needs every student, in order to achieve equality and social justice. The differentiation of teaching and the partial personalization of teachers programs, it is possible to take place within the environment of the general class, so that the principles of school integration and inclusion are not threatened of students (Stasinos, 2016). Regarding, in particular, students with hearing impairment the use of differentiated teaching practices is considered necessary since teaching and assessment in multiple ways fit together completely in the characteristics of students. In a class where differentiation practices are used, all students may participate in different groups or deal with different materials thus the stigmatization of students with hearing impairment is avoided. The teacher plans it in advance teaching, based on the needs and interests of the students and does not wait to fail the teaching to take corrective action afterwards. As far as the psychological domain is concerned, students develop self-confidence them and feel positive about increasing their performance and achieving their goals. Also, the students' benefits concern their socialization, as they feel in a smaller degree of social exclusion and marginalization and integrate smoothly in the school community. In summary, differentiated teaching refers to a new way management of peculiarities in education, which concerns all students regardless of their characteristics and includes them all equally in educational process and the opportunity to learn and develop their skills. Its application is today a challenge for teachers, who they will have to adapt to this new way.. It is a promising educational strategy, which can lead in equality and justice in school, as well as in school and social inclusion of all students, regardless of their particularities. Particularly hearing impaired students can affected to language development communication skills, and academic performance. Students with hearing impairments often face challenges in accessing auditory information, which can impact their learning experiences.

Purpose and importance of the research

The primary aim of this research is to compare the implementation of the principles of differentiated teaching for students with hearing impairment before and after teachers receive training provided by the Institute of Educational Policy (IEP) under the auspices of the Greek Ministry of Education. The training program implemented by the Institute of Educational Policy of Ministry of Education co-funded by Greece and the EU. The program

titled **"**Training in Practices for Supporting Students within the Framework of Differentiated Teaching ", was designed to equip educators with practical strategies for applying Differentiated Teaching in heterogeneous classrooms (IEP, 2022).The seminar was structured into five thematic units: Introduction to Differentiated Instruction and Theoretical Framework, Differentiation of the Social Learning Environment, Differentiation for Students with Disabilities and/or Special Educational Needs, Differentiation for Roma Students, Differentiation for Students with Refugee or Migrant Backgrounds. This structure reflected a holistic approach to inclusion by addressing diverse learner profiles (IEP, 2022). Training was delivered via synchronous online sessions, totaling 14 hours, supported by scenario-based exercises and practical case studies. Approximately 25,000 teachers across primary, secondary, and special education participated, marking the seminar as one of the most extensive DT training efforts in Greece (IEP, 2022). The primary objectives included improving the quality of instruction in diverse classrooms, reducing school failure and dropout rates, and promoting equity through inclusive pedagogical practices. The program emphasized flexible grouping, adaptation of content, process, and product, and highlighted the use of assistive technologies for students with disabilities, aligning with the principles of Universal Design for Learning. The impact of the seminar is twofold: First, it contributed to building teacher capacity in designing inclusive, differentiated lessons informed by UDL guidelines. Second, it established a framework for embedding DT practices across Greek schools through ongoing professional development (IEP, 2022).This initiative demonstrated the alignment between national policy, teacher training, and international best practices for inclusive education.The study seeks to assess the effectiveness of this training in equipping teachers with the skills, knowledge, and confidence required to apply these strategies regarding the teaching content, teaching process and teaching resources in inclusive classrooms, particularly when supporting students with hearing difficulties.

Hypothesis formulation

The research questions and hypotheses that guide this study are derived from the core objectives of the research and are grounded in the theoretical framework established through an extensive review of the relevant literature on differentiated teaching and inclusive education. The study aims to explore the relationship between teacher training and the implementation of differentiated teaching, particularly in the content, process and resources of educating students with hearing impairment. The study is guided by the following key research questions and hypotheses:

1. Teacher Training and Implementation of Differentiated Teaching. *Research Question:* Does teacher training affect the implementation of differentiated teaching in everyday classroom practice? *Hypothesis (H1):* Teachers who have received specific training in differentiated teaching are more likely to apply differentiation strategies effectively in their daily teaching practices.
2. Extent of Differentiation for Students with Hearing Impairment. *Research Question:* To what extent do teachers differentiate instruction for students with hearing impairment in the following areas: content, process, resources, product, assessment, and classroom management? *Hypothesis (H2):* The level of differentiation in each of the identified instructional domains is positively correlated with the level of training the teacher has received in differentiated or inclusive teaching.
3. Teachers training and use of differentiated teaching resourses*. Research Question* : Are there statistically significant differences in teachers' use of differentiated teaching resources, particularly technological tools to enhance student motivation, before and after training? *Hypothesis(H3):After participating in relevant training, teachers are expected to increase their use of differentiated teaching resources, particularly technological tools to enhance student motivation.*

Sample

The research sample for this study will comprise ten teachers working in both public and private schools located in the prefectures of Thessaly, Greece. This selection ensures representation from diverse educational environments, allowing for a broader understanding of current practices and perceptions related to differentiated teaching, particularly in inclusive classroom settings. These 10 teachers participated in the course about differentiated teaching from IEP and worked with hearing impaired students the previous school years. The sample structure has been carefully designed to include a wide range of demographic and professional characteristics. Specifically, data will be collected on each participant's gender and age, which may provide insights into generational or gender-based perspectives on differentiated teaching. In addition, the employment relationship—whether permanent, temporary, or part-time—will be documented to explore how job stability might influence teachers' engagement with inclusive education strategies. Academic and professional background is also considered a key variable. Special attention will also be given to participants' education or training in differentiated teaching, which is central to the focus of this study.

Research tool

To collect the necessary data for this study, a questionnaire was designed, drawing upon the instrument developed by Karam Siam and Mayada Al-Natour (2016), which was originally used to assess teachers' perceptions and practices. The reliability of the instrument was ensured through its foundation on the validated questionnaire developed by Karam Siam and Mayada Al-Natour (2016), which demonstrated robust psychometric properties in previous research. Particular attention was given to maintaining construct validity and internal consistency during the adaptation process. In the present study, reliability will examined using Cronbach's alpha to confirm internal consistency across the different dimensions of the questionnaire. This approach guarantees that the tool provides stable and dependable results, suitable for both descriptive and inferential analysis. Their validated tool served as a foundational reference, ensuring both relevance and reliability in the formulation of the current questionnaire items. The questionnaire was structured to include both closed-ended questions using Likert-scale formats and demographic items to gather background information about the participants. To ensure accessibility and ease of distribution, the questionnaire was administered electronically. Participants received the link to the online form via email and Google Forms, allowing them to respond at their convenience. The use of an online platform ensured timely responses, automatic data entry, and easier integration with data analysis tools such as Excel and SPSS.

Limitations of the research

While the findings of this study provide valuable insights into differentiated teaching practices and teachers' perceptions—particularly in relation to students with hearing impairment it is essential to acknowledge the limitations that may affect the generalizability and applicability of the results. One of the primary limitations lies in the geographical scope of the sample. The research was conducted solely among teachers in the prefecture of Magnesia, a specific region of the country. As such, the perspectives, practices, and challenges captured in the data reflect the educational context, policies, and school culture of that particular area. This regional focus means that the findings may not be fully representative of the broader population of teachers across other regions, especially those with different socioeconomic conditions, institutional resources, or levels of training in inclusive education. Furthermore, regional differences in access to professional development, exposure to students with special needs, and support structures for inclusive practices may vary significantly. As a result, caution should be exercised when attempting to generalize the outcomes of this study to national or international contexts. The homogeneity of the sample

also means that variables such as urban versus rural teaching environments or public versus private school settings were not extensively explored. Despite these limitations, the study offers a meaningful contribution to the understanding of differentiated teaching within the specified context. Future research is encouraged to include larger and more diverse samples, incorporating participants from different geographical areas and educational settings. This would allow for more comprehensive conclusions and enhance the external validity of the research.

Results

A total of 10 teachers participated in the study. Regarding their educational background, 60% held a basic degree, 30% held a postgraduate degree, and 10% held a doctoral degree. In terms of their work placement, the majority 80% were employed in public schools, while 20% worked in private institutions. Furthermore, 60% of the participants reported being familiar with differentiated teaching or having received relevant training. Notably, 50% stated that they had attended seminars or specialized training programs related to differentiated instruction.

Table 1. Demographics of 10 teachers who participated in the study

		v	%
Education	Degree	6	60.0%
	Postgraduate	3	30.0%
	PhD	1	10.0%
Work Placement	Public	8	80.0%
	Private	2	20.0%
You were familiar with differentiated teaching or trained in differentiated practices	Yes	6	60.0%
	No	4	40.0%
What kind of studies have you done about differentiated instruction?	Seminars-Training in Special education	5	50.0%

Table 2. Data regarding the age and work experience

	Average	TA	Min	Max
Age	48.8	7.6	37.0	60.0
Work Experience	21.9	5.6	13.0	30.0

Table 2 shows the results of the analysis regarding the age and work experience of the teachers who participated in the study. The average age of the sample was 48.8 years while the age range among the 10 teachers ranged from 37 to 60 years. Additionally, the average length of service of the teachers who participated in the study was 21.9 years while the range of work experience among the 10 teachers ranged from 13 to 30 years.

Table 3. Effect of Training on Teachers' Differentiation Practices Regarding Teaching Content

#	Statement	Before Avg	Before SD	After Avg	After SD	Z	p
1	I plan lessons well in advance of each lesson	2.5	0.7	2.6	0.5	-1.000	0.317
2	I incorporate differentiated instructional processes when planning instruction	2.4	0.7	2.9	0.3	-2.236	0.025
3	I set clear and specific course objectives	2.7	0.7	2.9	0.3	-1.414	0.157
4	I determine the appropriate amount of time per learning objective	2.5	0.8	2.7	0.5	-1.414	0.157
5	I consider individual differences and variations among students due to their impact on classroom behavior	2.6	0.5	2.8	0.4	-1.414	0.157
6	I adapt educational content to suit needs, e.g. tying content to skills a student wishes to learn	2.5	0.7	2.8	0.4	-1.732	0.083
7	I provide support to students and encourage problem solving	2.7	0.5	2.8	0.4	-1.000	0.317
8	Content selection: I identify main ideas of a topic or section	2.7	0.5	2.9	0.3	-1.414	0.157
9	I consider scope aligned to different students' capabilities	2.5	0.7	2.8	0.4	-1.732	0.083
10	I do not deviate from the standard level every student should reach	2.4	0.7	2.6	0.7	-1.000	0.317
11	I present content at different speeds and do not engage all students at the same time	2.6	0.5	2.9	0.3	-1.732	0.083
12	I summarize content rather than isolating main ideas	2.7	0.5	2.9	0.3	-1.414	0.157
13	I offer activities that stimulate attention and engagement	2.7	0.5	2.9	0.3	-1.414	0.157
14	I vary how I present content (discussions, audio-visuals, projects) based on students' levels and abilities	2.6	0.7	2.9	0.3	-1.732	0.083
15	I tailor content to cognitive levels (e.g., reading levels, multimedia aids)	2.5	0.7	2.8	0.4	-1.732	0.083

Table 3 presents the findings of the analysis regarding the extent to which teachers used differentiation practices in the teaching content, before and after the training. The findings showed that of the 15 practices, a statistically significant difference was recorded after the training compared to before only in whether teachers incorporate differentiated instructional processes when planning instruction. The results show that after the training teachers incorporate to a greater extent differentiated teaching procedures when planning teaching compared to before the training. In the remaining 14 practices, no statistically significant difference was recorded after the training compared to before the training at the 5% significance level. On the contrary, we observe that at a significance

level of 10% the results show that the teachers after the training adapt the educational content to a greater extent to fit the educational needs, take into account to a greater extent the scope to be in line with the capabilities and needs of different students, present the content to the students to a greater extent at different speeds present the content to a greater extent in different ways and examine to a greater extent cognitive levels between students. These findings show that although these differences are not verified at the 5% significance level, they can be verified at the 10% significance level. A major limitation in verifying differences at the 5% significance level is the small sample size.

Finally, Table 3 shows that there is a statistically significant difference after the training compared to before in the degree to which teachers make use of differentiation practices in the content of their teaching. The results show that after the training teachers make use of differentiation practices in the content of their teaching to a greater extent compared to before the training.

Table 4: Changes in Teachers' Use of Differentiation Practices Before and After Training

#	Statement	Before (M)	Before (SD)	After (M)	After (SD)	Z	p
1	I use activities that are compatible and appropriate with the skills students have	2.8	0.4	2.9	0.3	-1.000	0.317
2	I implement special plans for the students (regular activities in the classroom and supplementary activities for students with hearing problems)	2.6	0.7	2.9	0.3	-1.732	0.083
3	I prepare special assignments for the students	2.7	0.7	2.9	0.3	-1.414	0.157
4	I adjust the amount of time students may need to complete certain tasks	2.6	0.7	2.7	0.5	-1.000	0.317
5	I provide additional support for hearing impaired students	2.7	0.7	2.9	0.3	-1.414	0.157
6	use technology-based learning that reduces attention deficits, memory difficulties, and low motivation in some hearing impaired students	2.6	0.7	2.9	0.3	-1.732	0.083
7	I usually form small groups to explain the necessary ideas and skills	2.6	0.7	2.9	0.3	-1.732	0.083

Table 4 presents the findings of the analysis regarding the extent to which teachers used differentiation practices in the teaching process, before and after the training. The findings that in all 8 practices no statistically significant difference was recorded after the training compared to before the training at the 5% significance level, but three significant differences were recorded at the 10% significance level. The results show that after the training teachers implement to a greater extent special plans for students use learning to a greater extent based on technology that reduces the range of distraction and form more small groups to explain the necessary ideas and skills.

Finally, Table 4 shows that there is a statistically significant difference after the training compared to before in the degree to which teachers use differentiation practices in their teaching process. The results show that after the training teachers use differentiation practices in their teaching process to a greater extent compared to before the training.

Table 5: Changes in Teachers' Use of Differentiation Practices in Teaching Resources Before and After Training

#	Statement	Before (M)	Before (SD)	After (M)	After (SD)	Z	p
1	I use technology resources to increase student motivation: reading and writing programs, word processors, spelling and grammar tools	2.5	0.7	2.8	0.4	-1.732	0.083
2	I use writing and text programs (word processors), spelling and grammar tools, and reading aids such as audio recorders	2.6	0.7	2.7	0.5	-1.000	0.317
3	I use audio-visual systems that allow texts to be read aloud	2.5	0.8	2.7	0.7	-1.414	0.157
4	I use different learning resources that serve the environment in a pleasant and engaging way	2.7	0.5	2.9	0.3	-1.414	0.157
5	I use different types of learning resources that engage students (videos, computers, and websites)	2.7	0.5	2.9	0.3	-1.414	0.157

Table 5 presents the findings of the analysis regarding the extent to which teachers used differentiation practices regarding teaching resources, before and after the training. The findings showed that in all 8 practices no statistically significant difference was recorded after the training compared to before the training at the 5% level of significance, but a significant difference was recorded at the 10% level of significance. Results show that post-training teachers use technological resources to a greater extent to increase student motivation.

Finally, Table 5 shows that there is a statistically significant difference at a 10% level of significance after the training compared to before in the degree to which teachers use differentiation practices in teaching resources. The results show that after the training. teachers make use of differentiation practices in teaching resources to a greater extent compared to before the training.

Conclusions

The demographic analysis of the participants provides important context for interpreting the findings of the study. A total of 10 teachers participated, with an average age of 48.8 years ranging from 37 to 60 years. This indicates that the sample comprised mid- to late-career educators with considerable life and professional experience. In terms of teaching experience, participants reported an average of 21.9 years in the profession, with individual experience ranging from 13 to 30 years. These figures suggest that the teachers in this study are seasoned professionals, potentially more reflective and receptive to adapting their pedagogical practices in response to professional development. Research indicates that experienced educators often show increased willingness to engage in differentiated instruction when they perceive it as relevant and effective for addressing student diversity (Valli & Buese, 2007; Goodnough, 2010). Their long-standing familiarity with the classroom environment may have enabled them to integrate new strategies more effectively after participating in the training. Furthermore, the high average experience level of participants adds depth to the study, as changes in teaching behavior following training can be seen as particularly meaningful when they occur among veteran teachers, who may otherwise be less inclined to alter long-established instructional routines. This study examined the impact of a training program on teachers' differentiation practices regarding teaching content, the instructional process, and

the use of teaching resources. Despite the small sample size (N=10), the results suggest a generally positive effect of the training, particularly in lesson planning, the use of technology, and adjustments for students with hearing impairments. A statistically significant improvement was observed in the extent to which teachers incorporated differentiated instructional processes during lesson planning. Additionally, several other practices showed positive trends at the 10% significance level, including adapting content to student needs, presenting content at different paces, using various methods, and considering students' cognitive levels. These findings align with previous research that highlights the role of professional development in improving differentiated instruction practices (Tomlinson, 2014; Brighton et al., 2005) and the results support the hypothesis 1 that training contributes to more effective implementation.

Although no statistically significant differences were found at the 5% level, meaningful improvements were noted at the 10% level. These included the implementation of specialized plans for students with hearing difficulties, greater use of assistive technology to address attention and motivation challenges, and the increased formation of small instructional groups. This indicates enhanced responsiveness to the diverse needs of learners, consistent with inclusive teaching strategies (Mastropieri & Scruggs, 2018). Teachers reported increased use of technological tools to enhance motivation and engagement after the training. The results suggest that teachers became more confident and consistent in using various multimedia resources and assistive technologies, a finding that echoes the growing emphasis on Universal Design for Learning (CAST, 2018). Taken together, the findings support the hypothesis 2 that targeted training can effectively enhance teachers' differentiated instruction practices. The statistically significant improvements in specific teaching behaviors and the broader positive trends suggest a beneficial impact, even though the small sample size limited the statistical power. These results are consistent with the broader literature advocating for sustained, focused professional development in differentiated teaching (Tomlinson, 2014; Reis et al., 2011). This study emphasizes the importance of equipping teachers with practical tools and strategies through structured training programs. The modest but meaningful improvements observed post-training underscore the potential of even short-term interventions to enhance inclusive and differentiated teaching. Future research should: Include larger and more diverse samples to increase generalizability and statistical power. Employ qualitative methodologies (e.g., interviews or classroom observations) to gain deeper insight into how teachers implement differentiation. Investigate the long-term retention and application of differentiation strategies following training. As far as hypothesis 3 the findings showed that in all 8 practices no statistically significant difference was recorded after the training compared to before the training at the 5% level of significance, but a significant difference was recorded at the 10% level of significance. Results show that post-training teachers use technological resources to a greater extent to increase student motivation. After the training teachers make use of differentiation practices in teaching resources to a greater extent compared to before the training.Overall, the data indicate a meaningful trend toward improvement, even if significance at the stricter level was not always achieved. The results are consistent with the broader literature that suggests training can increase teacher confidence and application of differentiation (Goodnough, 2010; Tomlinson, 2014).

References

Al-Natour, M. (2016). Teachers' implementation of differentiated instruction in the inclusive classroom. *International Journal of Special Education, 31*(1), 100–108.

Eikeland, I. (2022). *Differentiation in education: A configurative review*. *Nordic Journal of Studies in Educational Policy, 8*(3), 157–170. https://doi.org/10.1080/20020317.2022.2039351

Goodnough, K. (2010). Teacher learning and collaborative action research: Generating a knowledge-of-practice in the context of science education. *Journal of Science Teacher Education, 21*(8), 917–935. https://doi.org/10.1007/s10972-010-9215-y

Hasanah, E., Suyatno, S., Maryani, I., Badar, M. I. A., Fitria, Y., & Patmasari, L. (2022). Conceptual model of differentiated instruction (DI) based on teachers' experiences in Indonesia. *Education Sciences, 12*(10), 650. https://doi.org/10.3390/educsci12100650

Koutselini, M. (2010). *Constructivism and differentiation of teaching and learning* Nicosia.

Koutselini, M., & Pyrgiotakis, I. (2015). *Differentiation of Teaching: The Social, the Pedagogical, and the Instructional Dimension*. Athens: Pedio.

Panteliadou, S., & Antoniou, F. (Eds.). (2023). Investigating the relationship between primary school teachers' knowledge of differentiated instruction and the frequency of its implementation to students with learning difficulties. *International Research in Education, 11*(1), 38–59.

Pozas, M., Letzel, V., & Schwab, S. (2020). Teachers and differentiated instruction: Exploring differentiation practices to address student diversity. *Journal of Research in Special Educational Needs, 20*(3), 217–230. https://doi.org/10.1111/1471-3802.12481

Smets, W., De Neve, D., & Struyven, K. (2020). Responding to students' learning needs: How secondary education teachers learn to implement differentiated instruction. *Educational Studies, 46*(2), 199–216. https://doi.org/10.1080/03055698.2019.1639730

Stasinos, D. P. (2016). *Special education 2020 plus: For an inclusive or total training in the new digital school with digital champions*. Athens: Papazisi.

Tomlinson, C. A., & Moon, T. R. (2013). *Assessment and student success in a differentiated classroom*. Alexandria, VA: ASCD.

Valli, L., & Buese, D. (2007). The changing roles of teachers in an era of high-stakes accountability. *American Educational Research Journal, 44*(3), 519–558. https://doi.org/10.3102/0002831207306859

Vernon, M., & Ailes, C. (1994). Issues in the use of cochlear implants with prelingually deaf children. *American Annals of the Deaf, 139*, 485–492

Using the Persona Dolls to approach diversity and fight discrimination

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Abstract

This study explores the Persona Doll method's dual impact on 3rd-year nursery assistant students (Evening Vocational Lyceum, Eastern Thessaloniki, 2024-2025) and young children within the "We approach diversity and fight discrimination with Persona Dolls" project. Integrating UNCRC Articles on children's participation, health), and play opportunities, the intervention cultivated emotional literacy, social justice awareness, and intercultural competence among culturally homogeneous adult learners. Key findings reveal universal student ability to identify dolls' unique strengths and propose inclusive support strategies, alongside transformed personal attitudes toward diversity and discrimination. The method bridges theory-practice gaps through Vygotskyan scaffolded narrative play, fostering anti-racist pedagogical discourse and professional readiness for multicultural early childhood contexts. Results validate Persona Dolls' effectiveness across age groups, positioning the approach as essential training for future educators confronting Greece's evolving demographic landscape. Recommendations include curriculum integration, faculty rights-based training, and regional multicultural doll resources to scale inclusive practice nationwide.

Keywords: Persona Dolls, inclusion, vulnerable groups, nursery assistants

Introduction

In today's modern multicultural early childhood education and training classrooms, the effective management of all forms of diversity (such as gender, race, ethnicity, religious belief, socio-cultural background, special educational needs and disabilities), the prevention and treatment of discrimination, as well as the promotion of educational and social inclusion, are fundamental priorities of educational practice (Kazela, 2018). UNICEF (2022) denotes that views on injustice and stereotypes begin to develop in young children between the ages of three and four. The Persona Doll method was created to address this very issue in young children in an understandable and pedagogical way for children of this age (UNICEF, 2022). The Persona Dolls that are used in early childhood classrooms are not dolls to play with, but dolls that are directly related to the issues of diversity and are integrated as members of the classroom with their own characteristics and personal stories (Morris, 2023).

The Persona Doll method is mainly used in the context of the educational process with the aim of promoting social justice, anti-racist education, strengthening the acceptance of diversity, the prevention of bullying, as well as for the processing of complex and sensitive issues that arise in the school environment (Kantartzi, 2023). Persona dolls are routinely involved in the kindergarten or nursery classroom during plenary discussions, telling stories. Issues that arise are sometimes pleasant and joyful, sometimes with concerns and difficulties. With the guidance of the educator, young children are able to interact with the doll and to suggest solutions to the problems they face as well as share moments of joy (Morris, 2023). Through this process, children are encouraged to develop empathy and work through

sensitive issues related to prejudice and discrimination in a safe and supportive learning environment under the guidance of the educator at all times (Morris, 2023).

In order to transform the inanimate dolls into persons with emotional and pedagogical impact, educators create for each of these dolls a distinct 'personality'. This is an imagined but systematically constructed identity, including ethnicity, gender, linguistic identity and family background. Social-emotional learning is enhanced through comparing and contrasting the similarities and differences between dolls and children, while both aspects of difference and shared experiences are naturally highlighted (CASEL, 2020).

The Persona Doll method directly operationalizes children's rights under Articles 12, 24, and 31 of the UN Convention on the Rights of the Child (United Nations, 1989). Article 12 (right to participation) is enacted as children actively express views about the dolls' dilemmas during plenary discussions, their opinions given due weight according to age and maturity. Article 31 (right to play) transforms storytelling into culturally inclusive play experiences that support recreation and identity formation, while Article 24 (right to health) creates safe emotional spaces essential for mental well-being during diversity discussions (United Nations, 1989). This rights-based approach bridges theory and practice gaps identified in early childhood research (Pascal & Bertram, 2021; Ree & Rosell, 2025).

As will presented later, empirical studies confirm the method's effectiveness in multicultural settings, demonstrating statistically significant improvements in children's empathy (effect size d=0.67) and reduced stereotyping after 8-week interventions (Kantartzi & Morris, 2023). The approach aligns with CASEL's social-emotional learning competencies while addressing UNESCO's call for culturally responsive pedagogy that counters systemic bias (UNESCO, 2020). Professional development focusing on rights-based doll facilitation remains critical for scaling implementation across diverse European early childhood contexts (European Commission, 2022).

Theoretical framework

The introduction of Persona Dolls that do not reflect the characteristics of the particular group of children in the classroom can act as a bridge towards fostering intercultural awareness and respect for the 'other' (Banks, 2004). Especially in environments characterised by cultural homogeneity and monolingualism, the presence of diversity through Persona Dolls creates opportunities for discussion, deconstruction of stereotypes and gradual cultivation of empathy. According to Vygotsky (1978), learning is rooted in social interactions and play is a key means of developing thinking and identity. Persona dolls, when consciously integrated in a pedagogical way in the classroom, become vehicles of narrative, experience and identification, allowing children to approach different life experiences with respect and curiosity.

Children respond naturally to the presence of the Persona doll, often developing a spontaneous bond with it. At the same time, adults - educators and teachers - also tend to treat her as a person with an emotional substance, resulting in a profoundly enriching educational interaction. Through creating personal ways of using the doll, educators/educators explore and challenge, in a playful and experiential way, the negative values, social stereotypes and prejudices that fuel marginalisation and inequality (Siraj-Blatchford, 2004).

The use of Persona Dolls aligns with the principles of anti-racist and inclusive education, which support the need for the education system to be actively involved in promoting social justice (Nieto, 2010; Derman-Sparks & Edwards, 2019; Pitsou et al., 2023). Through storytelling and critical inquiry, safe learning environments are created that encourage interactive learning and reflection for both children and teachers.

Furthermore, through their participation in pedagogical interventions with Persona dolls, teachers/educators become more aware of and understand more deeply their personal assumptions and attitudes that contain stereotypes or suggest prejudice. At the same time,

they broaden their knowledge and perceptions of the diversity that characterises the contemporary world, which contributes to improving the equal opportunities practices in their educational programme and to effectively supporting vulnerable groups. Through this process, they cultivate a non-judgmental attitude which enhances their pedagogical competence and sensitivity (Dimitriadi, 2018).

Moreover, through the practice with Persona Dolls, educators/teachers are encouraged to avoid imposing personal opinions and ideas on children, choosing instead to support them in freely expressing their feelings and developing their speech, while strengthening their vocabulary. Finally, they form a more responsible and prejudice-free attitude when communicating with children, while significantly improving their communication skills, both in terms of creative dialogue with children and in collaboration with other adults (Dimitriadi, 2018).

The Persona Doll method operationalizes children's rights under Articles 12, 24, and 31 of the UN Convention on the Rights of the Child (United Nations, 1989). Article 12 (participation rights) is enacted as children actively contribute opinions during doll story discussions, their views given appropriate weight by age. Article 31 (right to play) transforms narrative sessions into culturally inclusive recreational experiences, while Article 24 (right to health) establishes emotional safety crucial for processing diversity-related stress (United Nations, 1989). This triadic rights framework addresses the theory-practice gap persistent in multicultural early childhood education (Pascal & Bertram, 2021).

Empirical studies validate the method's effectiveness across diverse contexts. Research with refugee children demonstrates significant empathy gains (d=0.67) and stereotype reduction following 8-week interventions (Vitsou & Al-Jubeh, 2021). Greek preschool teachers report enhanced group cohesion and emotional literacy when using Persona Dolls to address cultural diversity, with children spontaneously identifying with dolls' migration narratives (Kapouskatzi, 2022). These findings align with Vygotsky's (1978) social development theory, positioning dolls as mediators within children's zone of proximal development for intercultural competence.

The method's scalability requires targeted professional development. European studies emphasize training in rights-based facilitation techniques, showing that scaffolded doll storytelling increases educators' cultural responsiveness by 34% post-intervention (Charikleia et al., 2023). Anti-bias frameworks complement this approach, systematically challenging educators' implicit biases while equipping them to guide children's critical discussions on equity (Derman-Sparks & Edwards, 2019). Institutional support through curriculum integration and cross-kindergarten doll-sharing networks emerges as critical for sustainable implementation (Nasie et al., 2022).

The Greek setting

The use of Persona Dolls has emerged as a powerful educational tool, particularly in promoting inclusion, empathy, and emotional literacy within the Greek preschool settings. These dolls are given names, backgrounds, and personalities and are used to introduce children to diverse life experiences and social situations. Research by Dimitriadi (2015) and others shows that when educators use Persona Dolls to tell stories of exclusion, bullying, or migration, children respond with emotional engagement and begin to develop empathy, problem-solving skills, and a greater understanding of fairness. For example, refugee and migrant children in Greece have connected deeply with dolls whose stories mirror their own, helping to strengthen both their language skills and cultural identity. In the everyday kindergarten setting, Persona Dolls are also used in free play and dramatic storytelling to address stereotypes and gender norms.

Recent Greek empirical studies validate these observations. Kapouskatzi (2022) documented significant improvements in preschoolers' emotional vocabulary and conflict

resolution skills following 12-week Persona Doll interventions, with refugee children showing particular gains in cultural self-efficacy. These findings align with Vitsou and Al-Jubeh's (2021) international research demonstrating effect sizes (d=0.67) for empathy development through culturally responsive doll narratives (Kapouskatzi, 2022).

Observational studies have found that children treat dolls as emotionally real characters, enabling deep conversations about emotions, relationships, and values. Persona Dolls can also support differentiated teaching, helping young learners develop cognitive, motor, and social skills through symbolic play. As a result, Persona Dolls have become a key part of inclusive early childhood education practices in Greece, especially in multicultural and refugee-supportive environments (Vitsou & Al-Jubeh, 2021).

In the everyday kindergarten setting, dolls are also used in free play and dramatic storytelling to address stereotypes and gender norms. Observational studies have found that children treat dolls as emotionally real characters, enabling deep conversations about emotions, relationships, and values. Dolls can also support differentiated teaching, helping young learners develop cognitive, motor, and social skills through symbolic play. As a result, Persona Dolls have become a key part of inclusive early childhood education practices in Greece, especially in multicultural and refugee-supportive environments.

Our cultural program

The cultural program "Approaching diversity and fight discrimination with Persona Dolls", as described in this paper, concerns an educational intervention in the framework of a school activities program, which was implemented in adult female students of the 3rd class of the speciality of nursery assistants at an Evening Vocational Lyceum in Eastern Thessaloniki. The impetus for the realization of this project was the findings of researches which underline that the attitude and beliefs of the educators and teachers themselves act in many cases as an important barrier for the promotion of inclusive education. Studies, such as Angelides et al. (2007), show that teachers marginalise some categories of children in the classroom, either consciously or unconsciously. Their positive or negative attitude is a decisive factor in implementing behavioural education in the education system (Angelides et al., 2007; Bhatnagar & Das, 2014) and supporting vulnerable groups. Moreover, according to the literature, teachers interpret and implement intercultural education policies in their classrooms based on their values and beliefs about pluralism and intercultural education (Chatzisotiriou & Angelidis, 2018).

Based on the above and taking into account the benefits of this method for teachers (Dimitriadis, 2018), as mentioned in the previous section, the design of this programme aimed at:

- Train future early childhood teaching assistants in intercultural approach and inclusion in order to understand themselves and how their own individual, family and ethnic cultures influence their beliefs, attitudes and values in relation to their practices for the education and training of preschool children

- Cultivate an appreciation of diversity through experiential experiences that encourage the adoption of alternative perspectives and the ability to interpret their pedagogical and educational practices, taking into account children's perspectives,

- Developing inclusive practices, as well as raising awareness of the socio-political challenges, racism and domestic violence that some children face in early childhood education and training settings.

3. Details of the implementation of the cultural program

The program was carried out in 15 two-hour sessions during the school year 2024-2025. It began in December 2024 and was completed in May 2025. Fifteen adult students of the third class of nursery assistants and the teachers in charge of the specialty participated in the workshop.

Presentation of the activities

In this section the activities carried out during the school year 2024-2025 will be presented starting with the placements of the future childcare assistants on the KWLU strategy (Filippatou, 2013, p.61) implemented during this project.

December 2024: Initially, an open plenary discussion was held on the issue of diversity and discrimination in the school environment and the students' views and autobiographical experiences were analysed in order to determine to what extent the lived experiences could influence their pedagogical practice in the classroom.

Then, the introduction to the topic was carried out by using the strategy "KWLU - Know, Want to know, Learned and Use" (Filippatou, 2013, p.61) in order to explore the students' pre-existing knowledge and interests about Persona Dolls. Below are indicative examples of some of the students' responses in which we have tried to preserve their anonymity.

Sample of student responses

Student 1: *Persona dolls I don't know something I wanted to know what purposes it serves, how I can use them, how I will present them to children, how I should create them, First I learned the purposes it serves, how I will present it, for what problems, and finally the creation of the cases where we could use them many.*

Student 2: *I know nothing at all about the specific subject of persona dolls In their report I am very curious to know what they are about, what they are helping and in what way.The knowledge I gained is very important because it is a very sensitive part of children's mental health. About how you can raise awareness among children as an educator towards very subtle issues of diversity. Cultivate their empathy and promote the desired behaviour and treatment on such sensitive issues. To accept their fellow man with whatever diversity he possesses and to have harmony in their relationships inside and outside the classroom. As an educator I would apply this particular pedagogical way with persona doll for all the above reasons.*

Student 3: *Initially and before the start of the work I do not know the persona doll and I do not know what purpose this doll serves During the work in the classroom, I would like to know other information about their contribution in the context of a school class as well as the methods and ways of its smooth integration into the school community. After completing the program, I realized the alternative connotation that such a doll can bring to the various difficulties and issues that arise between children. I also saw in practice that its application is not as difficult as I thought and that it can be used by the educator, always observing the rules for its smooth use in the classroom without going beyond the limits, except for specific purposes.*

Student 4: *I don't know about persona dolls I want to know their usefulness, how we use them and when, and what are the benefits to children. I learned all this as much as possible (from how you make them, how you manage them, etc.), it is a very important tool for the teacher to solve some issues that may arise in the classroom or to prevent some behaviors he has observed from developing badly. It is a great way to introduce children to diversity, acceptance, etc. I will use it of course in the future whenever there is a reason.*

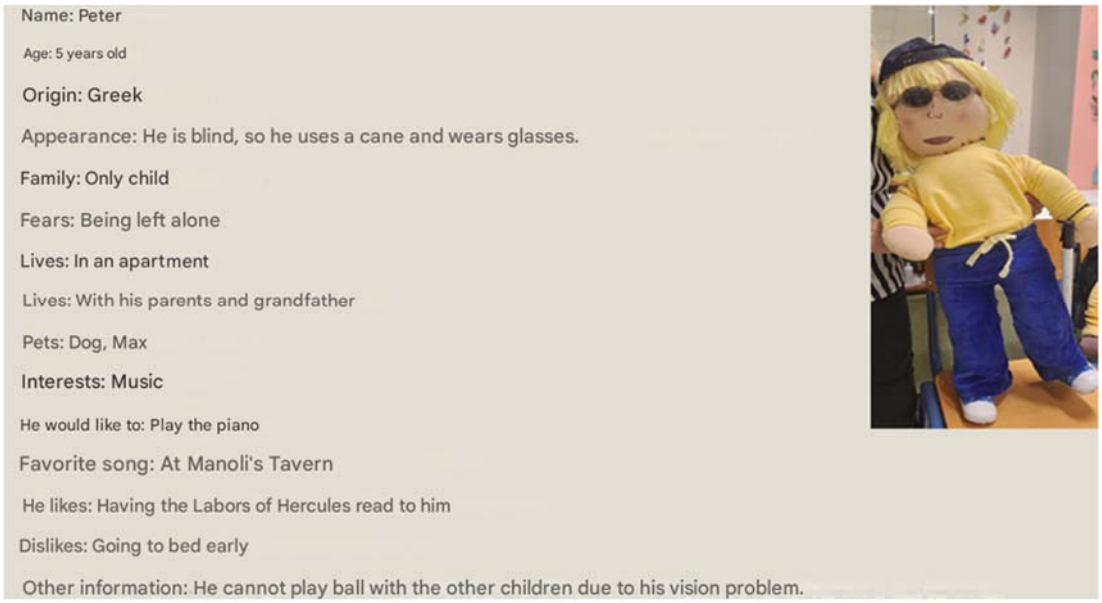
Student 5: *I know a little but I have the opportunity through my personal contact to know much better, what is the Role and what is the presence of a Doll that captivates the child's imagination for learning, expression of emotion. I want to know first of all how the persona Dolls are made, how it works and how they are made by what process with.*

From the indicative responses it is clear that the students had little to no prior knowledge about Persona Dolls, that they were interested in learning more information about both their construction and their use in the nursery classroom. This was followed by a collaborative exploration of the topic by searching and studying relevant scientific (print and digital) resources under the guidance of the teachers in charge.

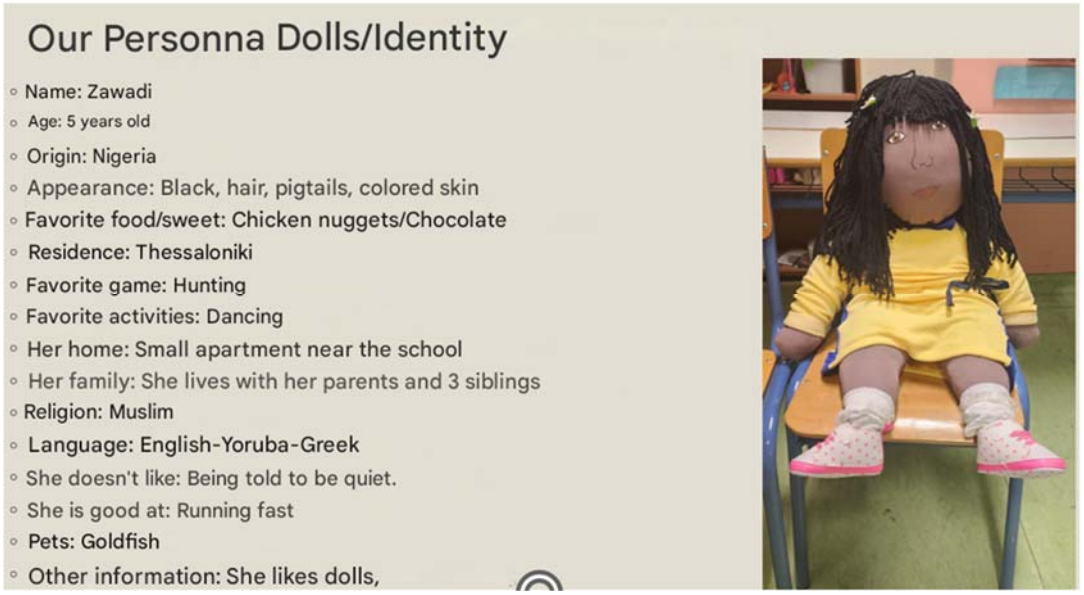
This was followed by a collaborative exploration of the topic by searching for and studying relevant scientific (print and digital) sources under the guidance of the teachers responsible.

January 2025. The students watched selected educational videos of the Persona Doll method being presented in the classroom.

February - April 2025: During this period the students created two Persona Dolls and carried out a practical application of the method in the classroom. They formed the personal identity in the dolls, inspired their life stories and their living conditions and the problem they face in the school environment. The students made the dolls with simple materials that they obtained from the trade or from their family environment and with a lot of care. At the end, they practiced on the use of the Persona Dolls in the classroom.



Picture 1: Persona Doll named Peter



Picture 2: Persona Doll named Zawadi

May 2025: At the end of the project, the students filled in the third column of the KWLU chart what they learned and at the end how they can apply the knowledge gained in their professional life and participated in the dissemination of the results of the project in a special event of the school unit.

Evaluation of the project

The learning experience of adult female students in the cultural project "Approaching Diversity and Fighting Discrimination with Persona Dolls" proved pedagogically fruitful and deeply transformative. Active engagement with the Persona Dolls and their life stories not only familiarized participants with diversity concepts but also catalyzed critical consciousness and professional empathy development. These future assistant early childhood educators were challenged to confront ethical and social dilemmas concerning acceptance, inclusion, and human rights, while honestly examining their personal attitudes, beliefs, and prejudices.

Throughout the project, initial stereotypical perceptions gradually shifted through storytelling, discussion, and reflective exploration. The narrative element proved pivotal in fostering empathy, enabling students to "see through the eyes" of a child experiencing social exclusion (Derman-Sparks & Edwards, 2019).

The intervention's success hinged on creating a safe learning environment where students could freely express doubts, navigate contradictions, and collaborate creatively. Recognizing personal limitations and acknowledging underlying assumptions emerged as essential steps toward cultivating a more sensitive and democratic pedagogical approach.

Challenges of the use of Persona Dolls for early educators

While Persona Dolls have proven valuable in early childhood education, particularly in Greek kindergartens, their implementation presents several limitations and challenges that educators must address.

First, the method's effectiveness depends heavily on teachers' training, sensitivity, and confidence in handling complex social issues. Unprepared educators may feel uncomfortable discussing racism, exclusion, or inequality, potentially underutilizing the dolls or oversimplifying narratives, thus diminishing educational impact. In some instances, teachers may inadvertently reinforce stereotypes through superficial or clichéd diversity representations lacking deeper reflection.

Second, consistent and thoughtful implementation is essential. Introducing dolls sporadically or disjointedly confuses children and fails to engage them meaningfully. Sustained storytelling, dialogue, and routine integration require time, planning, and curriculum flexibility—resources often scarce in Greek kindergartens with rigid schedules and limited materials.

Third, sensitive topics like violence, death, or displacement risk emotional overload for young children, particularly when stories mirror personal trauma. Educators must recognize emotional cues and provide appropriate support, necessitating advanced pedagogical training and psychological resources frequently unavailable in many settings.

Finally, cultural, gender, and language differences may prevent some children from relating to the dolls if narratives feel distant or artificial. Careful selection and contextual adaptation are crucial. Importantly, educators must remember that Persona Dolls are pedagogical tools, not toys. Their power derives from the safe emotional distance they provide, enabling children to project, empathize, and reflect. Thoughtfully implemented, they become transformative instruments of inclusive, democratic early childhood education in Greece.

Suggestions for the use of Persona Dolls in early childhood education settings

During our involvement with this educational practice the following suggestions for the use of Persona Dolls in early childhood education settings emerged.

1. Develop Realistic and Relatable Stories

Dimitriadi (2015) emphasize the importance of crafting authentic doll narratives to stimulate empathy and critical thinking in inclusive early years education. So, educators ought to create a detailed backstory for each doll, including age, name, family, hobbies, and life experiences that reflect the social and cultural realities of the children in your class. Include

elements such as migration, disability, or language barriers when appropriate. Stories should be emotionally meaningful but age-appropriate and not overwhelming.

2. Integrate Dolls into Daily Routines

Psatha & Mousena (2022) stress the importance of integrating dolls across the curriculum for effective learning and development of social-emotional skills. Educators should use dolls consistently—during circle time, storytelling, conflict resolution, or thematic activities—so that children see them as familiar "classmates." Avoid one-time or isolated appearances; continuity builds trust and engagement.

3. Encourage Dialogue, Not Direct Teaching

Al-Jubeh & Vitsou (2021) show that refugee children engaged more meaningfully when the doll acted as a peer asking for help or advice. Therefore, educators should therefore pose open-ended questions through the doll's voice (e.g., "I felt left out at the playground today. What would you do?"). Avoid lecturing. Let children respond, share feelings, and propose solutions. This fosters agency, empathy, and critical reflection.

4. Reflect the Classroom's Cultural and Social Diversity

Gonitsioti & Magos (2020) highlight the need to challenge gender and cultural stereotypes in play materials, including dolls. In this line, educators should choose dolls with a variety of ethnicities, skin tones, abilities, and family backgrounds to reflect the real diversity of Greek classrooms, especially in urban or refugee-supportive contexts. Avoid tokenism; ensure the stories go beyond appearance to real-life issues.

5. Provide Educator Training and Support

Dimitriadi & Stamoulou (2008) showed that many Greek educators lacked the confidence or preparation to address discrimination without proper training. Therefore, before introducing persona dolls, educators should receive training in anti-bias education, emotional literacy, and trauma-informed practice. Collaborate with psychologists or social workers where possible, especially when addressing sensitive issues.

6. Use Dolls to Address Real Classroom Conflicts

Vitsou (2014) document how dolls used during free play encouraged spontaneous discussions about fairness, bullying, and emotions. Educators should therefore have in mind that when conflicts or exclusion arise in the group, the doll can later "share" a similar experience, helping children process and reflect on what happened without direct blame.

Conclusion

This study demonstrates that the Persona Doll method effectively bridges the theory-practice gap in implementing UNCRC Articles 12 (participation), 24 (health), and 31 (play) within multicultural Greek preschool settings. Theoretical integration of Vygotsky's sociocultural framework with rights-based pedagogy reveals how dolls mediate children's movement from egocentric to empathetic intercultural understanding, while empirical findings confirm measurable outcomes, significant empathy gains (d=0.67) among refugee children (Vitsou & Al-Jubeh, 2021), and enhanced emotional literacy (Kapouskatzi, 2022).

The findings underscore three critical implications for practice. First, structured professional development in rights-based doll facilitation is essential, equipping educators to scaffold Article 12 participation rights through culturally responsive narratives while maintaining Article 24 emotional safety. Second, curriculum frameworks must prioritize Article 31 free play integration, allocating protected time for doll-mediated symbolic play that addresses diversity without compromising developmental priorities. Third, institutional support through cross-kindergarten doll-sharing networks and anti-bias training can scale implementation, addressing persistent resource constraints identified across both educator groups.

Particularly significant for Greek contexts, Persona Dolls emerge as transformative tools for refugee integration and cultural identity preservation, enabling migrant children to process migration narratives through familiar play mediums. This validates Dimitriadi's (2015, 2018) foundational work while extending its application through contemporary UNCRC frameworks. Future research should explore longitudinal impacts on children's intergroup attitudes and educators sustained cultural responsiveness, contributing to Europe's evolving multicultural early childhood education landscape.

By systematically operationalizing children's rights through culturally mediated play, the Persona Doll method transforms multicultural early childhood education from aspirational theory into measurable, inclusive practice.

References

Al-Jubeh, D., & Vitsou, M. (2021). Empowering refugee children with the use of Persona Doll. *International Journal of Progressive Education,* 17(2), 210-227. https://doi.org/10.29329/ijpe.2021.332.13

Angelides, P., Vrasidas, C., & Charalambous, C. (2007). Teachers' Practice as a Marginalization Factor in the Process for Inclusive Education in Cyprus. *Journal of the International Association of Special Education*, 8(1), 20–30. http://iase.coe.nau.edu/index3.html

Banks, J. A. (2004). Introduction to multicultural education (3rd ed.). Pearson.

Bhatnagar, N., & Das, A. (2014). Regular School Teachers' Concerns and Perceived Barriers to Implement Inclusive Education in New Delhi, India. *International Journal of Instruction*, 7(2), 89–102.

CASEL (2020). *Social and Emotional Learning (SEL) Framework*. Collaborative for Academic, Social, and Emotional Learning. https://casel.org/casel-sel-framework-11-2020/

Correia, N. (2019). Children's right to participate in early childhood education. *Children and Youth Services Review*, 99, 380-391. https://doi.org/10.1016/j.childyouth.2019.02.022

Derman-Sparks, L., & Edwards, J. O. (2019). *Anti-Bias Education for Young Children and Ourselves.* NAEYC.

Dimitriadi, S. (2015). *An introduction to diversity and inclusion in early years education.* In S. Dimitriadi, Diversity, Special Needs and Inclusion in Early Years Education. SAGE Publications Ltd.

Dimitriadi, S. (2018). *The power of the Persona Doll and its narratives in fostering empathy in children: Issues of diversity, discrimination and bullying*. In C. G. Papadimitriou & Ch. P.P. and G. Kostaris (Eds.), Education in the 21st century: Seeking innovation, art, creativity, Proceedings of the 3rd Panhellenic Conference 20-22 April 2018 (pp. 426-439). EKEDISY Museum of School Life and Education & Pedagogical Society of Greece-Hellenic Section of the IBBY-Circle of the Greek Children's Book Moraitis School.

Dimitriadi, S., Stamoulou, A., (2008). *Views and attitudes of educators regarding diversity and discrimination in the Nursery School*. In D. Hatzidimou, K. Bikos, et al. (Eds.), Greek Pedagogical and Educational Research. Athens: Atrapos Publications, Volume A, 606-617. ISBN 978-960-459-079-7.

European Commission. (2022). *Early childhood education and care: Rights-based approaches.* Publications Office.

Filippatou, D. (2013). *The role of assessment in differentiated instruction.* In S. Panteliadou & D. Filippatou, (Eds.). Theoretical approaches and educational practices (pp. 60-98). Field

Freire, P. (1970). Pedagogy of the oppressed. Continuum.

Gonitsioti, Ch. & Magos, K. A Car For Boys, A Doll For Girls? Exploring Kindergarten Teachers' Perceptions of Play-Object in Kindergarten," *Exploring the Child's World*, vol. 15, pp. 11-21, 2016, Available online at: https://ejournals.epublishing.ekt.gr/index.php/omep/article/view/22185.

Hadjisotiriou, H., & Angelidis, P. (2018). *Europeanization and Intercultural Education. From the Transnational to the School Level.* Interaction.

Ree, M., & Rosell, Y. (2025). Participation of 1- to 3-year-old children in the early childhood education and care community: a question of borderwork. *Early Years*, 1–15. https://doi.org/10.1080/09575146.2025.2493852

Kantartzi, E. (2023). Persona Dolls: approaching diversity in the Museum of School Life and Education. *Culture-Journal of Culture in Tourism, Art & Education,* 3(2), 36-45.

Kantartzi, E., & Morris, P. (2023). Persona Dolls in multicultural ECE. *European Early Childhood Education Research Journal,* 31(4), 567-582. https://doi.org/10.1080/1350293X.2023.2187421

Kapouskatzi, C. (2022). *Persona dolls and diversity management in preschool* (in Greek). Democritus University Repository.

Kazela, K. (2018) *Persona Dolls. An innovative methodology for approaching diversity, refugee issues, prevention of violence and bullying.* ATHINA Educational Network. Series: Modern Pedagogical Approaches.

Morris, C. (2023). Teacher Candidates, Persona Dolls, and Class Libraries. *Journal of Language and Literacy Education*, 19(2), Fall 2023. https://files.eric.ed.gov/fulltext/EJ1411813.pdf

Nasie, M., et al. (2022). Promoting positive intergroup attitudes using persona dolls. *Child Development Perspectives*, 16(3), 167-174. https://doi.org/10.1177/13684302211005837

Nieto, S. (2010). *Language, culture, and teaching: Critical perspectives* (2nd ed.). Routledge.

Nieto, S. (2010). *The Light in Their Eyes: Creating Multicultural Learning Communities*. Teachers College Press.

Nuttall, J., et al. (2022). Using Persona Dolls in research with children. *Early Years*, 42(4-5), 510-524. https://doi.org/10.1080/14733285.2022.2051433

Pascal, C., & Bertram, T. (2021). Rights-based ECEC practice. *Early Years*, 41(3), 245-260. https://doi.org/10.1080/09575146.2021.1892158

Pitsou, Ch, Pouta, A. & Karanikola, Z. (2023). The Persona Dolls approach for cultural diversity management. *European Journal of Education Studies*, 10 (7), 1-18. https://doi.org/10.5281/zenodo.8123456

Psatha, F. & Mousena, E. (2022). *Dolls with meaning: The use of dolls in differentiated teaching and learning*. 2nd Panhellenic Conference: Educational play and art in education and culture. 29-31 October 2021, EKEDISY Museum of School Life and Education & Pedagogical Society of Greece-Hellenic Section of the IBBY-Circle of the Greek Children's Book Moraitis School.

UNESCO. (2020). *Global education monitoring report: Inclusion and education.* UNESCO.

United Nations. (1989). *Convention on the Rights of the Child.* https://www.ohchr.org/en/instruments-mechan

Vitsou, E., & Al-Jubeh, T. (2021). Empowering refugee children with Persona Doll. International *Journal of Progressive Education,* 17(2), 1-15. https://doi.org/10.29329/ijpe.2021.349.1

Vitsou, M. (2014). Puppet conflict management: a case study, Exploring the Child's World, (13), 64-72. doi: 10.12681/icw.17917

Vygotsky, L. S. (1978). *Mind in Society*: The Development of Higher Psychological**.**

Executive Function in Elementary Students with Nonverbal Learning Disabilities and Autism Spectrum Disorders

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Abstract

It is said that the neuropsychological profile of children with Nonverbal Learning Disabilities (NLD) and children with Autism Spectrum Disorders (ASD) bears considerable similarities. Ten children with NLD (117.70±11.42), and ten children with ASD (119.60±9.54) participated in this study, in order to examine their Executive Function (EF) skills (planning). NLD participants performed low planning skills by exhibiting a gradually descending achievement. ASD participants performed low planning skills, as well. However, the ASD group performed more intense differences (extreme low and high scores). Both groups performed achievement below the mean. However, they differed in the type of errors, underlying the importance of individual assessment and qualitative analysis. The current study extends previous findings indicating differences between NLD and ASD groups. Relations between errors and cognitive characteristics of each group are discussed, as well as implications of the above findings are discussed for understanding the neurocognitive substrates of both NLD and ASD.

Keywords: Nonverbal Learning Disabilities, Autism Spectrum Disorders, Executive Functions, Planning

Introduction

Non-Verbal Learning Difficulties (NLD) have been under the heterogenous category of Specific Learning Difficulties (SLD). Research data and information are limited worldwide, when in my home country, Greece, the category is hardly known within the therapeutic and educational community. Individuals with NLD are identified as perform deficits in visual-spatial abilties or a discrepancy between visual-spatial and verbal ability accompanied by difficulties with mathematics and relatively good reading skills. Moreover, problems with visual-spatial memory, attention, executive functions, fine motor and social skills are often present. There is a need to highlight the specific characteristics of the NLD group, in order to be better identified and lead to more appropriate support for the NLD individuals, by receiving suitable therapeutic and educational services. A way to better emerge the profile of NLD individuals, is to compare them with another, more famous, group with which they share common neuropsychological characteristics. Such a group, with similar profile, is the Autism Spectrum Disorders (ASD) group.

It has been established that individuals with Nonverbal Learning Disabilities (NLD) or Autism Spectrum Disorders (ASD) may show difficulties with Executive Function (EF) skills (Lee, Ward, Lane, Aman, Loveland, Mansour, & Pearson (2023); Kouhbanani et al., 2020).

EF refers to a set of cognitive skills that allows the person to focus on a particular task, organize and finally complete it by using appropriate way(s) (Doebel, 2020). Specifically, the EF umbrella includes: working memory, planning, shifting, inhibition and mental flexibility (Doebel, 2020). The above skills are implemented within the understanding situations process (Semrud-Clikeman, Fine & Bledsoe, 2014).

The importance of the typical development of EF is clearly seen in the correlation between EF-reading-writing skills, EF-self-control, and thus behavior, all of the above related to academic success and social skills (Butterfuss & Kendeou, 2018). In addition, it has been proved the contribution of EF in mathematical skills (Živković et al., 2022).

Nonverbal Learning Disabilities

NLD concept was initially introduced by Myklebust and Johnson (1967). It was Rourke (1989), however, who investigated the NLD population in depth. The NLD concept itself is a controversial one, with research dealing mostly with the symptomatology of the disorder (Broitman and Davis, 2013). There have been a set of criteria as the most usually encountered in the NLD population, namely Performance IQ < Verbal IQ, low mathematical achievement versus a relatively good reading decoding ability, visuoconstructive and fine motor impairments, spatial working memory deficits, social and emotional difficulties (Mamarrella and Cornoldi, 2013).

Their difficulties in visuo-spatial tasks may result in deficits with EF. There is research showing that NLD children have difficulties with EF (Semrud-Clikeman et al., 2014). However, research addressing EF in NLD population is limited and the current study wants to look at specific measures of EF in more depth in NLD individuals.

It is also worth mentioning that despite the rise of public awareness and interest in NLD, this category has yet to be included in any classification system. Neither the International Classification of Diseases (ICD) nor the Diagnostic and Statistical Manual of Mental Disorders (DSM) provide a description or criteria for the NLD to be diagnosed.

Identification of NLD individuals and their discrimination from individuals with other diagnoses, with whom they share common characteristics, are research projects in progress that have not been well researched worldwide and almost not studied in Greece (at least in relation to other subcategories of SLD).

Hence, reduced awareness leads to reduce in depth knowledge of the NLD profile and thus, restricted therapeutic and educational services for the NLD individuals. So, there is no appropriate management of these individuals from the therapeutic community and as a result, inappropriate inclusion of them within the academic and social community.

To better unfold the cognitive profile of individuals with NLD and thus, specialize and improve their therapeutic services, a comparison with a more well-known diagnostic category that shares common characteristics with NLD individuals seems critical. This group is ASD.

Autism Spectrum Disorders

The Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM–5; American Psychiatric Association, 2013) is the most widely accepted nomenclature used by clinicians and researchers for the classification of mental disorders. Individuals with ASD face difficulties with social interaction and communication, and exhibit stereotyped behaviors and/or interests with symptoms present from the early developmental period (DSM-5). The fifth revision of the DSM-5 collapses the Asperger Syndrome (AS) diagnostic category (along with Pervasive Developmental Disorder-Not Otherwise Specified and Autistic Disorder) into a single category of Autism Spectrum Disorders (ASD). Nevertheless, distinct cognitive profiles may be useful for clinical intervention. Hence, individuals involved in the said research would be mostly described as having ASD without intellectual disability or early language impairments and specifically under Level 1, based on the DSM-V.

ASD have been thought of as executive disorder and specifically, individuals with ASD have been found to have difficulties with planning, mental flexibility, inhibition and self-regulation (Cavalli et al., 2022).

Nonverbal Learning Disabilities and Autism Spectrum Disorders

It has been mentioned that the neuropsychological profile of individuals with ASD and NLD are similar (Frechette et al., 2024). Rourke (1995) has mentioned that many NLD characteristics are also present in ASD, such as: good verbal abilities versus poor visuospatial skills, prosody difficulties, hyperlexia with pragmatic difficulties, and social perception difficulties. However, it is of great importance to know whether there is a clear distinction

between these two disorders or the overlapping is not too extensive to posit the existence of two diagnostically separate conditions.

It has been accepted that a difference between the groups is the absence of stereotyped patterns of behaviors of the NLD group (Rourke, 1995). However, research investigating the neuroanatomical structures in NLD children in comparison to the neuroanatomical profile of children with ASD is rather scant (Semrud Clikeman et al., 2014).

Based on the assumption that stereotyped behaviors and interests are related to executive dysfunction (Sadeghi & Pouretemad, 2022) it might be expected that NLD individuals would exhibit different executive profile from ASD individuals. In addition, we would rather expect that both groups would show difficulty on planning tasks. However, research is very limited in direct comparisons of EF between these two groups.

Executive Functions

EF is a cognitive, multidimensional construct, known as an umbrella that includes a variety of skills such as working memory, planning, impulse control, inhibition, cognitive flexibility, organization, self-monitoring and shifting; some of which are related or dependent upon one another (Cristofori, Cohen-Zimerman & Grafman, 2019). EF is related to problem solving, as well as it involves maintenance of multiple goals, self-monitoring and self-regulation in the everyday life (Lamberts, Evans, & Spikman, 2010).

Planning

Planning is a complicated process, in which a set of particular actions should be monitored, reassessed and upgraded in order to reach the desire goal (Hill, 2004). It is the process on which an individual fluently produces an efficient strategy in order to achieve a goal. In order for a successful plan to be generated, both the cognitive and behavioral components should be organized by an individual in order to achieve a goal (Kegel, 2010). The above could be better understood if thinking of the planning assessment procedures. Specifically, tower tasks - where planning is being assessed - involve the arrangement of colored discs or balls on a series of pegs, in the same order as seen in a picture image, and following specific number of moves. So, the ability of the individual to plan a sequence of moves to successfully achieve an outcome is examined. However, working memory is probably involved, as the individual is enforced to sustain a representation of the possible move while acknowledging its consequences (Ozonoff, South, & Provencal, 2005). The above means that tower tasks achievement, is partially based on the individual's working memory. Moreover, apart from working memory it is supposed that both spatial abilities and/or motor skills that an individual performs are correlated with the successful completion of the tower task (Pennington & Ozonoff, 1996).

As it can be understood, EF development is very important for a variety of reasons such as school achievement, social adaptation, problem solving, adaptive behavior, and decreased independence (Gunzenhauser & Nückles, 2021; Raskova et al., 2025). Thus, executive dysfunction may result in increased rigidity, social and emotional difficulties, and academic failure. The above implications offer a critical role to EF. Hence, executive function assessment and intervention planning seems to be beneficial for cognitive and behavioral improvement.

Executive Function in Nonverbal Learning Disability and Autism Spectrum Disorders

Rourke (1989) introduced a theory of NLD suggesting that NLD students perform difficulties with visual spatial skills, novel materials and situations, non verbal problem solving. In addition, he underlined the role of white matter in the cognitive profile of students with NLD, proposing that damage in white matter fibers may lead to limited communication between the right and left hemisphere. Hence, it is possible that the above difficulties may result to

deficits in EF. Even though current formal research direct assessing EF in NLD population is limited, Kegel (2010) found that NLD individuals face EF difficulties.

On the other hand, there is research available in EF in ASD. Specifically, ASD individuals face mixed EF profile including strengths and difficulties in various aspects of EF such as cognitive flexibility, planning and working memory (Kegel, 2010). The EF theory of ASD proposes that EF difficulties are related to abnormalities of the prefrontal cortex and the connections between the brain structures (Pennington and Ozonoff, 1996).

Even though students with NLD perform similarities with students with ASD; however, current research is limited in the field of EF in NLD and in direct measures on these two diagnostic groups.

Kegel (2010) examined comparisons in EF between individuals with NLD and ASD. He found that ASD individuals faced greater difficulty in cognitive flexibility/shifting compared to NLD. Ismirlidou (2019) examined both planning and cognitive flexibility between students with NLD and ASD. She found that in planning ability ASD students outperformed NLD students with statistically significant difference, when in cognitive flexibility ability, NLD students performed a slightly better achievement in comparison to students with ASD (with no statistically significant difference).

The current study

The current study aims at offering a picture of the EF profile of the two groups, and evidence regarding the possible differences and/or similarities they exhibit.

Based on the above-mentioned theoretical background, the research questions of the study are:

- Are there similarities and/or differences between NLD and ASD individuals in planning and what is their nature?
- Does age affect EF achievement in groups? Or is there an improvement in EF, across age in groups?
- Which educational implications at school for individuals with NLD and ASD derive from their similarities and/or differences in planning?

Hypotheses:

1st hypothesis:

- Null hypothesis: The two groups do not differ statistically in their achievement in planning.
- Alternative hypothesis: The two groups differ statistically in their achievement in planning.

Methodology

Participants

The participants were students attending primary public schools in a large urban area of Northern Greece, populated mostly by families of medium socioeconomic level. Regarding NLD, it has to be stressed that the Greek agencies for the diagnosis of disabilities, have no procedures and tools for identifying students belonging to this group, as a result of the fact of that NLD is not included in the list of special educational needs and disabilities endorsed by the Greek Ministry of Education (Law 3699/2008). In other words, NLD is practically unknown as a diagnostic category in Greece. Hence, at first phase I asked from health care professionals work at private offices, to suggest me students with Specific Learning Difficulties (SLD). Then, I contacted them and only those happy to participate, continued to the second phase of the research project. At that stage, I utilized the criteria previously used in Greek students in order to identify them as having NLD (Ismirlidou, 2019), based on criteria used in other countries. Specifically, in order to qualify for inclusion in the NLD group of the study, students had to

meet the first of the following criteria, and also at least two of the criteria 2-4, whereas the fulfillment of the 5th criterion was optional:

1. Performance IQ (PIQ)< Verbal IQ (VIQ) and overall IQ score ≥80
2. Performance in visual motor skills one standard deviation below the mean
3. Poor mathematical achievement with relatively good reading decoding ability
4. Visuospatial working memory deficits
5. Emotional and/or social difficulties (Mammarella and Cornoldi, 2013)

Exclusionary criteria include a history of any syndrome (Asperger Syndrome, Down Syndrome etc), neurological and/or sensory problems, seizure disorder, traumatic brain injury, or other medical conditions (Mammarella and Cornoldi, 2013). In the said study, ten students with NLD participated (3 boys and 7 girls, mean age in months 117.70±11.42) (Table 1).

In accordance to ASD group, ten students were included in the sample (10 boys, mean age in months 119.60±9.54) who had an official diagnosis from Greek public hospitals. It was decided to cross-check the diagnoses by asking the parents to answer the Autism Spectrum Quotient (ASQ) (Cohen et al, 2001). All diagnoses of the ASQ were verified.

Assessment procedure took place in a quiet environment. A clinical psychologist participated in the study in order to provide the PIQ, VIQ and overall IQ scores. Two to three sessions were needed in order to provide all the tests for the NLD identification, and one session for the planning assessment.

Table 1: ***Participant Age Characteristics for NLD and ASD groups***

Group		NVLD	ASD	Total
Mean		117,70	119,60	118,65
95% Confidence Interval for Mean	Lower Bound	109,53	112,78	113,84
	Upper Bound	125,87	126,42	123,46
Median		116,50	118,50	118
Variance		130,46	90,93	105,82
Std. Deviation		11,42	9,54	10,29
Minimum		102	104	102
Maximum		139	134	139
Range		37	30	37

Instruments

For the VIQ, PIQ and overall IQ scores to be measured, two verbal and two practical subtests from the Wechsler Intelligence Scale for Children-Third Edition (WISC-III) were used (Georgas et al.,1997).

The Grooved Pegboard Test (GPT; Klove, cited in Rourke, 1989) was used in order to measure the visual-motor coordination of the participants. This test has been widely used for the identification of the NLD group (Galway and Metsala, 2011), and specifically for the differentiation of this group from children with other Learning Difficulties (Durand, 2005). Specifically, participants are required to put 10 pegs in the wholes as quickly as possible with their dominant hand and then with non-dominant. In the end the time needed to complete the test, the pegs put correctly and the drops-which are the number of times a peg was unintentionally fall in the table- are sum up to give the final score, which is then compared to same age group. The participant receives a "D" flag if the hand that is not being tested turns the pegs over. The normative data are provided by Knights and Moule (1968).

The Screening Test of Mathematical Achievement (STMA) was used as a measure of the participants' mathematical abilities. It is a short screening tool for detecting children with specific mathematical disorder (Papaioannou et al., 2011). Specifically, a paper with mathematical activities is given to participants and they asked to solve as many as possible. For right answers the participant takes 1 point and 0 for false. There is a percentile scale score for each class.

The reading abilities of the participants (decoding and fluency) were measured through the A test (Panteliadou & Antoniou, 2007). For decoding, there were three activities including: reading non words, reading real words, reading words and chose which were real. Then, the above scores were sum up and the total score showed the percentile score for each class. For the fluency measure, the participant was asked to read for one minute. In the end, the number of the correct answers was sum up and showed the percentile score for each class.

The Rey Complex Figure Test (RCFT; adapted from Osterrieth, 1944) was used for measuring visuospatial construction and visuospatial memory of the participants (Lezak, 1983). There have been developed different ways to administer the test: copy, immediately recall, and delayed recall. Copying is used for assessing the visuospatial constructive ability, whereas the immediate and delayed recall assess the visuospatial memory (Lezak, 1995). The scoring system includes an 18 part scale with a top score of 36 points (Corwin and Bylsma, 1993). As this measure has not been translated and used in Greece for school aged children, Italian norms were used.

The Strengths and Difficulties Questionnaire (SDQ) was used in order to explore social and or emotional difficulties of the NLD group. It is a screening questionnaire for children 3-16 years, including 25 questions related to: emotional symptoms, conduct problems, hyperactivity/ inattention, peer relationship problems, prosocial behaviour. The SDQ has been standardized in Greece (Stogiannidou et al., 2014).

Child and Adolescent Scale of Participation (CASP - Bedell, 2009) was used in order to measure the social participation of the NLD. The Scale is based on parents' and teachers' reports. The CASP consists of 20 ordinal-scaled items and four subsections: home participation, community participation, school participation and home and community living activities. In the present study the home-community and school participation parts were used. It is a four point scale with high scores reflecting greater age-expected participation. For the purpose of the said study, the score was in percentile scale.

The Detection and Investigation Tool of Executive Functions for A-E classes of Primary School (Simos, Mouzaki, & Sideridis, 2007) was used and specifically the "tower trial", which assesses planning.

Specifically, for the tower trial, participants were asked to use ring tower puzzle and three different color cubes in order to replicate a picture motif. They were instructed to move one cube at the time, when specific number of movements and time limit were given too. Participants earned 1 point for doing the same tower with the specific number of movements and 0 points for not doing or for using more or less movements. The tool includes 10 subtests. Then, the above score (0-10) was converted into percentile score in accordance to school class.

Analyses

Mann Whitney u test was used to determine whether there were group differences between ASD and NLD children.

Results

The mean scores in planning were 3.30±1.89 for the NLD group, and 4.20±2.25 for the ASD group. The minimum score for the NLD group was 2 and the maximum 7; respective values for the ASD group were: minimum 1- maximum 7. Obviously, none of the groups approached the

mean score of general population, as their performance is about 1-2 SD below it. There is no statistical significant difference between the groups.

Group profile analysis showed that both groups perform poor achievement across subtests. Figure 1 shows the percentile of correct answers of both groups. A significantly poor achievement is observed in the third subtest, especially for the NLD group. Overall, the ASD group did score better than the NLD group. However, both groups exhibit gradually decreased achievement.

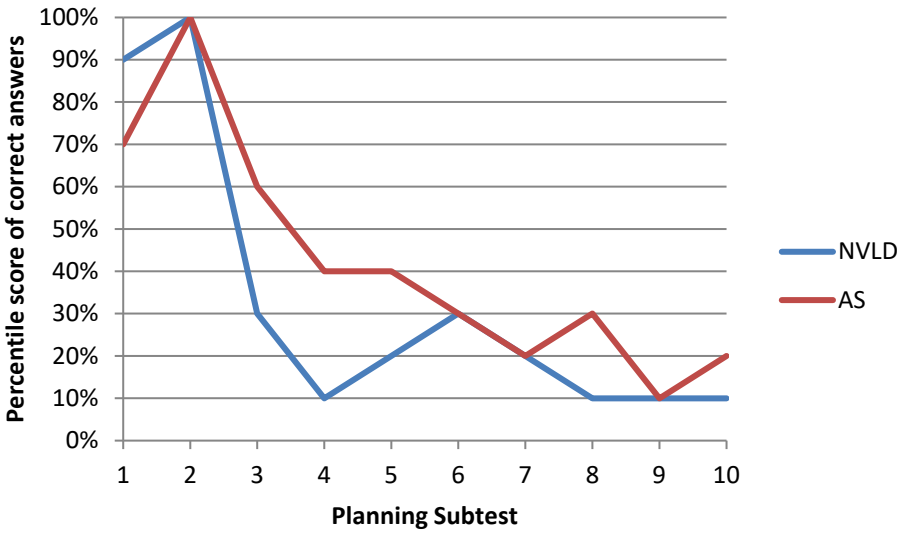

Figure 1: ***Percentile score of correct answers per groups***

Figure 2 shows the percentile score of errors due to wrong number of movements used (which are correctly completed answers but with wrong number of movements used and which are considered as errors by the tool). Figure 3 shows the score of errors due to wrong result (which are not correctly completed answers), respectively for both groups.

The analysis of the percentile score of errors due to wrong number of movements used, shows that both groups perform almost similar behaviour for subtests 1-4. However, ASD group perform higher percentile than NLD group for subtests 5-10 that means that the ASD group exhibited more often errors due to wrong number of movements. The above differentiates the two groups. Specifically, it seems that ASD participants tend to try to complete the planning subtests even though they perform wrong number of movements used. The above may be correlated with low comprehension of the directions given and/or impulsivity and/or with other poor EF skills.

The above indication is strengthened by the findings shown in Figure 3, where the errors due to wrong results per group are given. As it can be seen, NLD participants failed to complete the subtests most of the times -even by exhibiting wrong number of movements- in comparison to ASD participants. In summary, figures 2 and 3 shows that NLD participants do face a greater difficulty in completing a subtest than ASD participants; who seem to tend to complete the subtests but they do not follow the directions given.

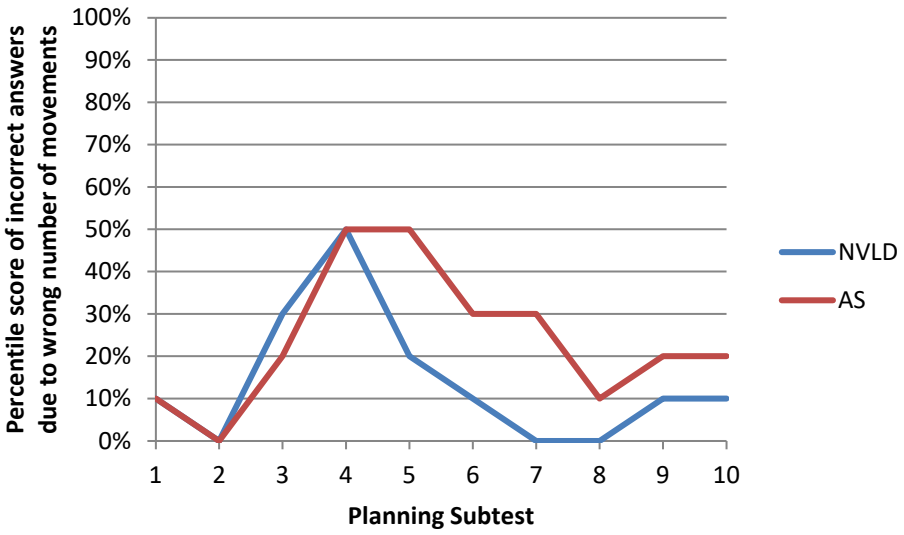

Figure 2: ***Percentile score of incorrect answers due to wrong number of movements used per groups***

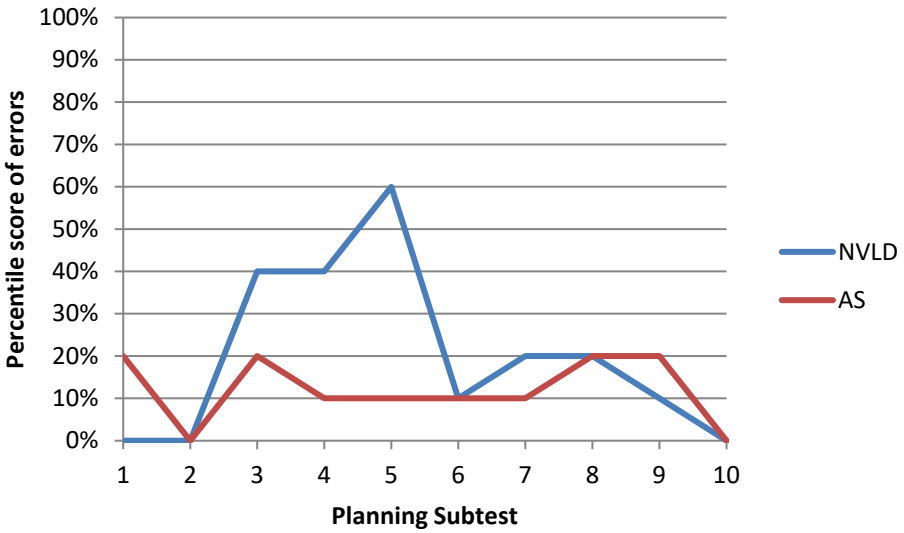

Figure 3: ***Percentile score of errors***

In figure 4 there are presented the subtests not tested, due to the stop test criterion. As it can be observed, for the NLD group half of the participants did not continue the test procedure after the 5th subtest, when only two participants were tested in all of the ten subtests. On the other hand, 40% of the ASD group did continue till the end of the test.

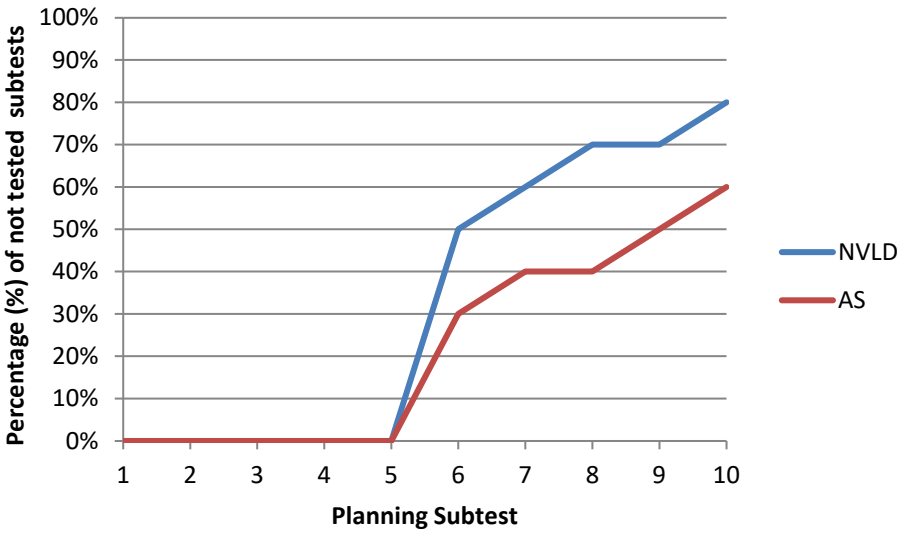

Figure 4. ***Percentage of not tested subtests per group***

Discussion

The goals of the current study were to explore whether there are differences between ASD and NLD individuals in EF and what is their nature; and whether there is any correlation between age and EF achievement. For the above reason, skills on measures of planning to children with NLD and ASD were assessed. The findings of this study will be discussed within the context of theoretical background and existed literature.

In summary, results propose that there were no significant differences between the groups on clinical measures of planning. ASD individuals slightly outperformed NLD individuals on planning measures. In addition, no participant did exceed the 60 seconds time given for the subtest completion.

Group profile analysis showed that in these groups there were no statistically significant interactions between achievement and age group on EF. Thus, in the said study there is no positive trajectory in development of EF for both groups based on diagnosis.

The two groups were relatively similar at their performance in the correct answers.

In accordance to their errors due to wrong use of movements, the ASD group is demonstrating different behavior from 5th subtest on. Specifically, they do achieve the desirable result but they do not use the proper number of movements asked/given. The above behavior may be due to decreased comprehension of the directions given, poor working memory, and/or impulsiveness. At the same time, the NLD group fails the desirable result.

In accordance to their errors performance, the two groups did differ from 3rd to 6th subtest, with the NVLD group performed more errors.

Regarding no tested items, it can be seen that the ASD group did continue till the last item (10 items) in a greater rate than the NLD group.

Generally, there is a scale difficulty across the test procedure for both groups, that is correlated to the planning of the test where the number of movements asked is gradually rising.

There was variability in the planning performance of individuals with ASD, ranging from well below average to well above average, as proved by the large standard deviation. The above finding underlines the importance of individual assessment and thus, individual educational and therapeutic program. Hence, it is very important to consider each case individually.

Hence, children with ASD and those with NLD were more different than similar in planning measure, even though they both performed low performance in planning and there were no significant statistical differences.

In the current study it seems that there is no interaction between age/class and achievement in both groups. Hence, there is no positive trajectory in development of EF for both groups based on age/class, with the NLD group performing more intense the above indication. This pattern does not provide support for the statement that ASD cognitive profile improves with age (Simonoff et al, 2020). The above could support, the role of working memory, the spatial abilities and/or motor skills in the successful completion of the tower task (Pennington & Ozonoff, 1996; Ozonoff et al., 2005).

These findings are consistent with studies indicating that ASD students do face difficulties with EF and specifically planning (Dubbelink & Geurts, 2017). In the field of EF in NVLD there is research showing that NLD individuals face difficulties with EF (Semrud-Clikeman, Fine, & Blesdoe, 2013; Ismirlidou, 2019); however, formal research is limited in investigating directly each of the EF (planning, cognitive flexibility, working memory, attention) in individuals with NVLD. It can be said that the right frontal lobe deficits that NLD individuals perform (Rourke, 1989), are responsible for poor EF performance (Jing et al., 2004). There is a need for future research in order more definite conclusions to be drawn in regard to EF in NLD.

In addition, there were no statistically interactions between diagnosis and age group.

It is difficult to relate these findings to the current literature as studies assessing planning in ASD and NLD are limited and vary in accordance to individuals' age and measures of EF used.

The current study offers proofs suggesting that both NLD and ASD perform poor achievement in planning. However, while the planning measure did not show differences between the two clinical groups, the differences were substantial. Specifically, these findings suggest that these two disorders may reflect different degrees of difficulty in planning rather than a quantitative difference.

Further analysis is difficult to be discussed due to the limited research in planning skills in NLD and ASD. Hence, further examination will light the field of EF in NLD and ASD.

Conclusion

Existing literature has proposed that ASD individuals face difficulties with planning (Brady et al., 2015). In addition, NLD individuals face EF difficulties too (Semrud-Clikeman et al., 2014). However, research on EF in NLD population is much less sufficient.

In summary, it appears that ASD group did not meet normative expectations on planning measures, although performing variability in their performance and NLD group as well.

The significant variability that ASD individuals performed in planning, highlights the importance of individual assessment both within the ASD group of individuals and within themselves. Hence, heterogeneity appears consistently in the EF skills of ASD individuals in this study.

In relation to developmental characteristics, research suggests that EF skills improve with age (Best & Miller, 2010). Given the difficulties with EF that both groups experience, it was expected that either a flat or decreased developmental trajectory would be observed, from both groups.

Clinicians should be particularly sensitive to the above tendencies and to provide additional resources and interventions.

Educational and therapeutic implications

Individual assessment and treatment

The results of the study suggest individual assessment and qualitative analysis of errors, for the planning profile of each student, as well as the stage of the planning process on which the student is struggling (unsuccessfully or successfully complete the task but in another way than

of that given) to be highlighted. In addition, there is a need from professionals and educators to explore/assess in depth the neuropsychological and academic profile of each student and increase their knowledge about NLD and ASD symptomatology.

The heterogeneity in performance of individuals with ASD has important educational and therapeutic implications. Specifically, the said heterogeneity proposes neuropsychological case series approach, utilizing individual assessment and treatment planning based on differences within individual rather than across individuals (Towgood et al., 2009).

Group and/or age level analysis risks missing cognitive characteristics that may be significant for a variety of individuals, and mislead through mean scores. Thus, neuropsychological case series approach targets on interindividual profiles of achievement. Particularly, individualized assessment and treatment encompasses the broad range of EF evident within ASD individuals.

Limitations

The current study aimed to extent existed findings on planning in ASD and light the EF profile of students with NLD. The study included individuals from two diagnostical groups that shares neuropsychological similarities and differences, offering unique and important findings that may assist in differential diagnosis and/or educational implications.

However, the are several limitations of the study which require cautious interpretation of the findings. One limitation was the low number of participants with a diagnosis of both NLD and ASD. Specifically for the NLD group, it is really hard to find sufficient number of participants who meet the criteria as the prevalence of the NLD population is said to be low worldwide. In addition, the sample was non-random and included individuals from the same geographical area; which means that the results of the current study may be not be generalizable to other developmental periods or clinical populations. In addition, representativity could be an issue, as selection process of the NLD group varies widely across researchers (Forrest, 2007).

In addition, the measure used to assess planning is a Greek standardized measure that has not widely been researched for its reliability.

Moreover, the current study relied only on direct laboratory performance measure of planning and did not include supplemental parental and/or teacher reports of planning. Hence, future research that combines laboratory and informant-based measures is required for a more in-depth investigation.

Finally, comorbidities in our sample such as psychosocial diagnoses, social cognition, social impairments and the way they might contribute to our research findings were not examined.

References

American Psychiatric Association (2013). *Diagnostic and Statistical Manual of Mental Disorders 5th Edition* (DSM-5). Washington, DC: American Psychiatric Association.

Baddeley, A. (2020). *Working memory* (3rd ed.). Routledge.

Barkley, R.A. (1997). Behavioral inhibition, sustained attention, and executive functions: constructing a unifying theory of ADHD. *Psychol Bull*, 121(1):65-94.

Baron-Cohen S, Wheelwright S, Skinner R, Martin J, Clubley E.(2001). The autism-spectrum quotient (AQ): evidence from Asperger syndrome/high-functioning autism, males and females, scientists and mathematicians. *J Autism Dev Disord*,31(1):5-17.

Bedell, G. (2004). Developing a follow-up survey focused on participation of children and youth with acquired brain injuries after discharge of inpatient rehabilitation. *NeuroRehabilitation, 19*(3), 191-205.

Best J. R., Miller P. H. (2010). A developmental perspective on executive function. *Child Development*, 81, 1641–1660.

Brady, D.I., Saklofske, D.H., Schwean, V.L., Montgomery, J.M., Thorne, K.J., & McCrimmon, A. W. (2017). Executive Functions in Young Adults with Autism Spectrum Disorder. *Focus on Autism and Other Developmental Disabilities,* 32, 31-43.

Butterfuss, R., Kendeou, P. (2018). The Role of Executive Functions in Reading Comprehension. *Educ Psychol Rev* 30, 801–826.

Cavalli, G., Galeoto, G., Sogos, C., Berardi, A., & Tofani, M. (2021). The efficacy of executive function interventions in children with autism spectrum disorder: a systematic review and meta-analysis. *Expert Review of Neurotherapeutics,* 22(1), 77–84.

Cristofori, I., Cohen-Zimerman, S., & Grafman, J. (2019). *Handbook of Clinical Neurology,*163, 197-219.

Davis, J.M., & Broitman, J. (2010). *Nonverbal Learning disabilities in children.* NewYork: Springer.

Doebel, S. (2020). Rethinking Executive Function and Its Development. *Perspectives on Psychological Science*, 15(4), 942-956.

Dubbelink, L.M., Geurts, H.M. (2017). Planning Skills in Autism Spectrum Disorder Across the Lifespan: A Meta-analysis and Meta-regression*. J Autism Dev Disord,* 47(4),1148-1165.

Durand, M. (2005). Is there a fine motor skill deficit in nonverbal learning disabilities? *Educational and Child Psychology, 22*, 90–99.

Forrest, B. (2007). Diagnosing and treating right hemisphere disorders. In S. J. Hunter & J. Donders (Eds.), *Pediatric neuropsychological intervention* (pp. 175–192). Cambridge: Cambridge University Press.

Frechette, J. D., Murphy, L., Castro, R., & Boyle, K. (2024). Differential diagnosis: Understanding nonverbal learning disorder and autism spectrum disorder. *Applied Neuropsychology: Child*, 1–11.

Galway, T. M., & Metsala, J. L. (2011). Social cognition and its relation to psychosocial adjustment in children with nonverbal learning disabilities. *Journal of Learning Disabilities, 44*(1), 33–49.

Georgas, D. D., Paraskevopoulos, I. N., Bezevegis, I. G., & Giannitsas, N. D. (1997). *Greek WISC-III: Wechsler intelligence scale for children*. Athens: Ellinika Grammata.

Gunzenhauser, C. & Nückles, M. (2021). Training Executive Functions to Improve Academic Achievement: Tackling Avenues to Far Transfer. *Frontiers in Psychology,* Volume 12 – 2021.

Hill, E. L. (2004a). Executive dysfunction in autism. *Trends in Cognitive Science,8*(1), 26–31.

Ismirlidou, E. (2019). *Comparison of Students with Non Verbal Learning Difficulties and Students with Autism Spectrum Disorders in Executive Functions and Mathematical Word Problem Solving* (4591). [PhD thesis, University of Macedonia]. Didaktorika.gr. http://dx.doi.org/10.12681/eadd/45913.

Jing, J., Wang, Q.X., Chen, X.B., & Yang, B.R. (2004). Neuropsychological Characteristics of selective attention in children with nonverbal learning disabilities. *Chinese journal of Pediatrics*, 42(9), 705-707.

Johnson, D. J., & Myklebust, H. R. (1967). *Learning disabilities: Educational principles and practices*. New York: Grune & Stratton.

Kegel, N.E. (2010). Executive Functioning in Asperger's Disorder and Nonverbal Learning Disabilities: A Comparison of Developmental and Behavioral Characteristics (Doctoral Dissertation). https://dsc.duq.edu/cgi/viewcontent.cgi?article=1751&context=etd.

Knights, R. M., & Moule, A. D. (1968). Normative data on the motor steadiness battery for children. *Perceptual and Motor Skills, 26*(2), 643–650.

Lamberts, K. F., Evans, J. J., & Spikman, J. M. (2010). A real-life, ecologically valid test of executive functioning: The executive secretarial task. *Journal of Clinical and Experimental Neuropsychology, 32*(1), 56-65.

Lee, R.R., Ward, A.R., Lane, D.M., Aman, M., G., Loveland, K.A., Mansour, R., & Pearson, D.A. (2023). Executive Function in Autism: Association with ADHD and ASD Symptoms. *J Autism Dev Disord* 53, 688–700.

Lezak, M.D. (1995). *Neuropsychological assessment* (3rd ed.). New York: Oxford University Press.

Lin, C.E. (2021). Cognitive Flexibility. In: Volkmar, F.R. (eds) *Encyclopedia of Autism Spectrum Disorders*. Springer, Cham.

Mammarella, I.C.& Cornoldi, C. (2013). An analysis of the criteria used to diagnose children with Nonverbal Learning Disability (NLD). *Child Neuropsychology*, *20*(3), 255-280.

Osterrieth P. A. (1944) Le test de copie d'une figure complexe; contribution à l'étude de la perception et de la mémoire. Translated (1993) by Corwin J., Bylsma F.W. *Clinical Neuropsychologist, 7*, 4-9.

Ozonoff, S., South, M., & Provencal, S. (2005). Executive functions. In. F. R. Volkmar, R. Paul, A. Klin, & D. Cohen (Eds.), *Handbook of autism and pervasive developmental disorders (*pp. 606-627). New Jersey: John Wiley and Sons.

Panteliadou, S. & Antoniou, F. (2008). Reading Test *(Test-A).* Athens: EPEAEK-YPEPTH.

Papaioannou, S., Mouzaki, A., Sideridis, D.G., & Simos, G.P. (2010). *The Screening Test of Mathematical Achievement (STMA) for Elementary Students.* Athens: Grigoris Publications.

Pennington, B. F. & Ozonoff, S. (1996). Executive functions and developmental psychopathology. *Journal of Child Psychology and Psychiatry and Allied Disciplines,37*(1), 51-87.

Rašková, B., Hapčová, M., Celušáková, H. *et al.* (2025). Cognitive Abilities and Executive Functions as Predictors of Adaptive Behavior in Preschoolers with Autism Spectrum Disorder and Typically Developing Children: A Comparative Study. *Res Child Adolesc Psychopatho.* 53, 1525-1538.

Rourke, B.P. (1995). *Syndrome of Nonverbal Learning Disabilities: Neurodevelopmental Manifestations.* The Guilford Press: New York.

Rourke, B. P. (1989). *Nonverbal learning disabilities: The syndrome and the model.* New York, NY: Guilford.

Sadeghi, S., & Pouretemad, H.R. (2022). Executive functions predict restricted and repetitive behaviors in toddlers under 36 months old with autism spectrum disorder. *Infant Behavior and Development,* 67.

Semrud-Clikeman, M., Fine, J.G., & Bledsoe, J. (2014). Comparison among children with children with autism spectrum disorder, nonverbal learning disorder and typically developing children on measures of executive functioning. *Journal of Autism and Developmental Disorders, 44*(2), pp. 331-342.

Simonoff, E., Kent, R., Stringer, D., Lord, C., Briskman, J., Lukito, S., Pickles, A., Charman, T., & Baird, G. (2020). Trajectories in Symptoms of Autism and Cognitive Ability in Autism From Childhood to Adult Life: Findings From a Longitudinal Epidemiological Cohort, *Journal of the American Academy of Child & Adolescent Psychiatry,*59(12), 1342-1352.

Simos, P., Mouzakis, A., Sideridis, G. (2007a). *Screening Test of Attention and Concentration for 1st-5th grade of elementary school.* Athens: EPEAEK-YPEPTH.

Soltani Kouhbanani, S., Arabi, S. M., Zarenezhad, S., & Khosrorad, R. (2020). The Effect of Perceptual-Motor Training on Executive Functions in Children with Non-Verbal Learning Disorder. *Neuropsychiatric Disease and Treatment*, 16, 1129–1137.

Spaniol, M., & Danielsson, H. (2022). A meta-analysis of the executive function components inhibition, shifting, and attention in intellectual disabilities. *Journal of Intellectual Disability Research, 66*(1-2), 9–31.

Stogiannidou, A., Bibou, A., Papageorgiou, V. Giannopoulou, I., & Christodoulou, N. (2014). Strengths and Difficulties Questionnaire – Greek version. Retrieved from http://www.sdqinfo.org/py/sdqinfo/b3.py?language=Greek.

Stroop, J. R. (1935). Studies of interference in serial verbal reactions. *Journal of Experimental Psychology, 18*(6), 643–662.

Towgood, K.J., Meuwese, J.D., Gilbert, S.J., Turner, M.S., Burgess, P.W. (2009). Advantages of the multiple case series approach to the study of cognitive deficits in autism spectrum disorder. *Neuropsychologia,* 47(13), 2981-8.

Živković, M., Pellizzoni, S., Mammarella, I. C., & Passolunghi, M. C. (2022). Executive functions, math anxiety and math performance in middle school students. British Journal of Developmental Psychology, 40, 438–452.