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Challenges for preschool teachers in STREAM education

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Abstract

Excellence in education is achieved through a combination of disciplinary and interdisciplinary approaches, ensuring the content is meaningful and relevant to all students. Consequently, it is crucial to focus on basic skills in science, reading, technology and engineering, arts, and mathematics (STREAM) from early education. The publication aims to explore the preschool teachers' challenges in implementing STREAM education. The findings, based on a survey (mixed) research design, identify that the introduction of STREAM education in preschool requires a change in teachers' thinking about the organization of the pedagogical process, to implement STREAM education principles, methodologies, and approaches that are appropriate to the perception and learning conditions of preschool children, thus ensuring the desired learning outcomes and sustainability.

Keywords: challenges for teachers, preschool, STREAM education

INTRODUCTION

The ability to create new added value is one of the most important skills an individual needs to be able to move forward in the future–2030–in the face of global uncertainties and to contribute at family, community, nation, and societal levels. The ability to think creatively, to create new products, services, jobs, new processes and methods, and new social models–all of these can be created by being open and willing to explore using one's creative potential (OECD, 2018; UNESCO, 2023). The education system, starting from the pre-primary stage, lays the foundations for how successfully an individual will be able to demonstrate these skills in the future. It is therefore important to focus the education process already in pre-primary school on the development of basic environmental science, reading, technology and engineering, arts, and mathematics (STREAM) skills in everyday activities.

This paper analyses the results of the study by focusing on three contexts in preschool education:

(1) STREAM characteristics and preschool teachers' perceptions,

(2) the rationale and situation of STREAM education in preschool education in Latvia, and

(3) teachers' challenges and professional development need in implementing STREAM education in preschool education.

Characteristics of the STREAM Concept

STREAM is an evolution of science, technology, engineering, and mathematics (STEM) and STEAM. STREAM education encompasses science, technology, reading, engineering, arts and mathematics and is considered an important component for the development of 21st century education across multiple sectors (Gumenykova et al., 2019). STREAM education explains more than the previous strategies (STEM and STEAM) because real-life situations are addressed, so we cannot separate one discipline from another to solve a problem. Working on literacy at different stages or levels could improve performance not only in reading but also in other areas of learning. including texts and tasks based on children's interests (Hubbard, 2021). The application of this approach in preschools is highly valued by Awang et al. (2020, p. 1075) who argue that "actual STEAM skills are acquired when children become confident that they can ask about anything and find solutions to any problems they face". Slišuniene (2019) highlights in her research the importance of developing awareness of the environment in preschool children, as this skill is linked to emotional intelligence,

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Contribution to the literature

- The article highlights the importance of basic skills in science, reading, technology, engineering, arts, and mathematics (STREAM) from early childhood within the context of Latvia's educational system.
- The study underscores the challenges faced by teachers and their professional development needs in implementing STREAM education in preschool. The study's uniqueness lies in its focus on the competencies required for preschool teachers in this context.
- The findings are relevant for teacher training curricula and for addressing children's attitudes towards STREAM education.
- The research provides valuable insights for improving educational practices and policies with the aim of achieving better learning outcomes.

ultimately supporting children's full and holistic development. By interacting with the environment and other people, the child enriches personal experiences, leading to a higher level of skills and understanding (Nguyen, 2023). Looking at the importance of environmental factors from a different perspective, Lian et al. (2018) conclude that situations in which a child has limited opportunities to pursue a given activity or environments with limited choices are not conducive to, but on the contrary stifle, children's creativity. Also, deliberately created conditions of competition and rivalry affect the expression of creativity in children. Other conditions that inhibit these expressions include limiting children's curiosity; triggering emotions of fear and shame; and destructive criticism (Lian et al., 2018). A stimulating meaningfully designed physical environment provides a safe place for children to engage in active, self-directed learning and discovery (Knauf, 2019). The teaching of science-related subjects has evolved from individual processes to an integrated approach. This shift in educational focus reflects a change in our conception of human development and our capacity to solve problems. Sanders (2009) explains that the United States National Science Foundation initiative in the early 1990s used SMET, a combination of science, mathematics, engineering, and technology. This initial merger was created to give scientists, technologists, engineers, and mathematicians greater political influence (STEM Task Force, 2014). Over time, the acronym became STEM, which has also evolved over the last thirty years as interest and knowledge about integrated approaches has grown. Therefore, teacher professional development is also important and is considered one of the key factors in promoting a change-oriented education system, as sustainability awareness reduces students' neglect of environmental degradation and promotes interest in sustainable development and STEM fields (Hart & Lee, 2003; Malik et al., 2019). The STEM outcomes defined by the Latvian education system also emphasize the importance of sustainable development, such as "sustainable use of natural resources, environmentally friendly actions" (Ministry of Education and Science, 2021).

Rationale for Introducing STREAM Education in Preschool

Pre-primary education is one of the key factors influencing later life and development, as it is during this period that learning abilities are at their highest (Sarıkaya & Coşkun, 2015). The regulation on national guidelines and model curricula for preschool education emphasizes that the content of preschool education consists of values and virtues, knowledge, understanding, and basic skills in seven subject areas, which include STREAM topics (Cabinet of Ministers, 2018). Then introducing STREAM education in preschool, it is important for teachers to focus on

(1) the importance of children's hands-on activities in developing an understanding of the environment and natural patterns (Dewey, 1910),

(2) cooperative learning, collaborative problem-solving (Vygotsky, 1978), and

(3) The development of social contexts and skills that enable the child to adapt to continuous social change (DeJarnette, 2018).

In this context, the implementation of the creative movement in everyday activities is an important element in the implementation of the STREAM curriculum. It is another way for children to express their feelings and thoughts non-verbally and in different authentic forms. Alper and Ulutas (2022) define creative movement as the interaction of the body and mind during movement (e.g., to music), where an image or feeling is demonstrated through body language using original, authentic movements. During creative movement, attention is paid to the process, the ability to be aware of one's body and the environment is strengthened. Expressing oneself through the body is a natural and understandable way for a child to express him/herself, and it is therefore desirable to support and encourage the child to use such expression. The child's inherent bodily-kinesthetic awareness can be fostered not only through creative movement activities but also through drama (movement arts), and role-play activities (Alper & Ulutas, 2022). Fostering a deeper understanding of the STEM–STEAM–STREAM sector in childhood leads to meaningful contributions to society and a sustainable future (Varthana, 2024). Birzkops (1999) describes simultaneity

Table 1. Data analysis categories and subcategories

Research categories	Sub-categories	Codes
Sustainability	Sustainable use of natural resources	S 1.1.
	Environmentally friendly behavior	S 1.2.
	Research activities development of curiosity	S 1.3.
	Involving children in a wide range of activities at pre-school and in the local community	S 1.4.
Children's interests and needs	Child-centered texts and tasks (e.g. for practicing reading)	I 2.1.
	Personalized learning–considering each child's needs, strengths, interests, uniqueness, goals, and pace	I 2.2.
	Opportunities to choose materials and/or activities	I 2.3.
Self-expression and creativity	Expressing children's feelings, thoughts	C 3.1.
	Creativity in movement, music, visual arts	C 3.2.
	A stimulating physical and emotional environment	C 3.3.
Solving problems	Children's opportunities will be achieved through different (individual) pathways	P 4.1.
	Involving children in a wide range of activities to develop deeper understanding	P 4.2.
	Practical action in real-life situations	P 4.3.
	Cooperative learning	P 4.4.

as the ability to simultaneously grasp all components of an action or phenomenon. It determines the individual's perceptual transition from sequential, gradual forms to simultaneous, simultaneous forms. Thus, simultaneous perception plays an important role in the development of any child's activity, including STREAM education, and in enhancing learning productivity.

STREAM Implementation Challenges

Today, the ability of educators to keep up with the pace of innovation, as well as to develop themselves, is becoming a topical issue. Zelyurt (2018) emphasizes the need for openness to change in the professional development of preschool teachers. This includes both openness to innovation and the search for new solutions and alternatives (Waters et al., 2005). Unfortunately, traditional methods do not always justify themselves and succeed in bringing about significant change, so it is important to look for methods that are in line with current trends. Changing leadership is a 'new how', breaking down the boundaries of what used to be the norm. It "takes time, dedication, hard work and learning to develop the professional competence of educators" (Yeboah & James, 2012, p. 170). At the same time, it is also essential to be aware of children's learning and development needs (Branch et al., 2015), children in the preschool phase must be provided with conditions that are appropriate to their individual needs and growth, helping them to develop according to the cultural values and characteristics of the community, developing both cognitive and socio-emotional skills that are crucial for their future success in school and later in adult life (OECD, 2018). The implementation of STREAM education in preschool is influenced by teachers' perceptions, beliefs, attitudes, and previous experiences, so it is important to explore and understand preschool teachers' perceptions and challenges in implementing STREAM education. Previous international research reveals positive perspectives on the implementation of STEM/STREAM education, while also highlighting challenges that include a lack of knowledge and understanding of practical implementation, as well as a lack of professional development training that could support meaningful and quality implementation of STREAM education in preschool (Cinar et al., 2016; DeJarnette, 2018; Sujarwanto et al., 2019; Ultay & Ultay, 2020).

MATERIALS AND METHODS

Research Design

A mixed (sequential explanatory survey) research design was chosen for the study, which allows combining qualitative and quantitative data collection and analysis strategies and integrating them into the interpretation of the study results (Asenahabi, 2019). The results of the quantitative data analysis were obtained from an initial pilot study previously conducted in May 2024, which explored preschool teachers' experiences and challenges in organizing the preschool learning process. The questionnaire was completed anonymously, and participation was entirely voluntary. To get a general idea of the context of the study and to make comparisons between the data, only the results of the questionnaire relevant to the implementation of STREAM education in preschool were used. To further explore the specificities of STREAM in preschool and to analyze the challenges for preschool teachers, a focus-group discussion was organized. Coding was used to analyze the qualitative data, and content analysis of the responses was carried out, identifying the most frequent conceptual units. The data were grouped and analyzed according to the categories describing STREAM education. Sub-categories were identified, and codes were assigned to the categories, allowing for a more detailed systematization of the data (**Table 1**). All ethical research standards under the general data protection regulation were followed in this study.

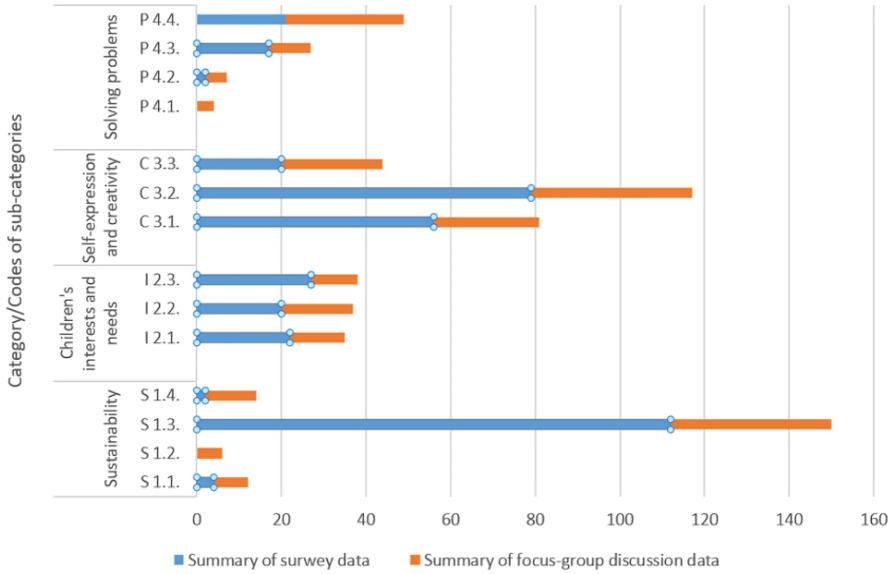

Figure 1. Summary of teachers' challenges according to categories (with subcategories) (Source: Authors' own elaboration)

Research Participants

The survey sample consists of preschool teachers (N = 182), who represent preschool education institutions in large cities, towns, and rural municipalities in Latvia. A stratified sample was used in this study, and participants were selected based on accessibility. This article is limited to preschool teachers and students working in preschool educational institutions. Ten participants (n = 10) took part in the focus group discussion: 4 preschool teachers with at least 5 years of teaching experience, 3 full-time final-year students, and 3 part-time students working in a preschool institution.

RESULTS

The questionnaire and focus group interview data reveal teachers' perceptions and opinions on the principles of STREAM education. Through content analysis of the data and according to categories and sub-categories, 642 conceptual units were identified and coded. The data are presented by categories and sub-categories (**Figure 1**).

The data analysis focused on the sub-categories with the highest and lowest number of conceptual units in each category. The results of the coding of the data from the questionnaires and focus group interviews suggest that the teachers' challenges apply to all the categories that characterize STREAM education. Teachers most strongly associate STREAM education with activities included in the categories 'self-expression and creativity' (38%) and 'sustainability' (32%), with lesser associations that might suggest challenges found in the categories 'children's interests and needs' (17%) and 'solving problems' (13%). The data showed that teachers' views on the relationship of STREAM education to children's research and curiosity development (code S 1.3, 150 conceptual units) and creativity in movement, music, and visual arts (code C 3.2, 117 conceptual units) were predominant. On the other hand, when analyzing the sub-categories within each category group, the sub-categories with the lowest correlation (according to teachers) are "children's opportunities to achieve goals through different (individual) pathways" (code P 4.1, 4 conceptual units) and "environmentally friendly behavior" (code S 1.2, 6 conceptual units), which in turn is related to an incomplete understanding of STREAM education and possible challenges. Teachers' challenges in implementing STREAM education identified in focus group interviews:

1. Availability of resources for implementing STREAM education. Teachers point to insufficient resources, infrastructure and facilities, and inadequate availability of STREAM learning materials, as well as insufficient or non-existent career support activities in STREAM.
2. Factors affecting STREAM learning opportunities, availability of STREAM activities. Preschool teachers noted that insufficient and inadequate availability of learning materials hindered opportunities for deeper and broader STEM learning. Teachers also mentioned technical resources and equipment, insufficient parental involvement and support, teachers' overall workload, children's interest, and public attitudes (interest) towards STREAM as factors hindering STEM learning.
3. Activities for STREAM learning in depth, linking with life skills.

Teachers indicate that additional funding for equipment and meaningful teacher professional development activities would be needed. Teachers acknowledge that educational institutions do not provide additional STEM learning opportunities beyond

the requirements of the education standards. Targeted development of STEM education requires ensuring that the basic necessities (teaching materials, technical resources and equipment) in educational institutions are at a sufficient level. Teachers cite continued early involvement in STREAM education as a way to promote STREAM education–to make non-formal STEM education available to preschool students across Latvia. STREAM education in the context of inclusive education. Teachers see access to STREAM activities in the context of inclusive education, for example for children with mental disabilities, learning and attention disabilities, and visual, hearing, and mobility impairments, as a pressing issue in STREAM learning and also in the implementation of the competencies approach. Teachers' competence and the need for professional development to implement SREAM education. Teachers indicate a lack of competence to implement STREAM education in preschool, as well as a lack of confidence to use IT tools such as interactive whiteboards, tablets, and other research-related activities such as microscopes, robots, etc. freely in their daily work. Teachers also point to the need to develop other skills related to STREAM education, such as ensuring the development of each child's individual potential; meaningful cooperation with other colleagues and with children's parents; planning and organizing the learning process, developing the relevant knowledge, skills and attitudes needed for a child's life.

DISCUSSION

Latvia's education system is undergoing major changes, introducing competency-based content and approaches to its implementation, including the development of STEM education at all levels of education. The current curriculum content is grouped into seven subject areas, five of which are specifically STREAM: science, mathematics, languages, cultural awareness and self-expression in the arts, and technology.

According to the Certus (2016) Latvian competitiveness report, 3,000 IT graduates would be needed annually to meet the needs of the Latvian market, which would not only provide the potential for the development of the sector but also generate interest in Latvia as a location for global ICT companies. According to a study by the Ministry of Education and Science (2021), the average number of IT graduates in Latvia is only around 700 per year, making it crucial to promote the development of competitive STREAM education at all levels of education, with an emphasis on pre-school education. It is also important to identify potential future research directions, such as exploring negative trends in STREAM education and the impact of early STREAM advanced education on study or career choices.

The pre-primary curriculum provides for the development of basic STREAM skills, but there are no opportunities to learn STREAM in depth. This is usually addressed through non-formal learning opportunities at the request of parents and providers, such as robotics or art classes. Based on the Ministry of Education and Science's (2021) study, the supply of both interest education and other non-formal education opportunities in preschool education is generally low and there is very uneven coverage in the national context. It is, therefore, essential to ensure in-depth coverage and monitoring of STREAM education in pre-school education institutions.

Identifying the challenges of STREAM education, the following competencies for preschool teachers should be defined:

(1) the ability to see the potential development of each child as an individual, providing them with the opportunity for quality education,

(2) meaningful cooperation with other colleagues in planning and implementing a learning process that enables pre-school children and students to develop the knowledge, skills, and attitudes necessary for life in the 21st century, and

(3) the use of IT tools in the pre-school learning process.

CONCLUSIONS

1. STREAM education in preschool is a philosophy, a way of thinking, emphasizing a multidisciplinary approach in which science, technology, reading, engineering, art and mathematics are integrated into the preschool learning process. It forms a comprehensive education and a foundation for developing 21st century relevant skills.
2. The introduction of STREAM education in preschool requires a change in teachers' thinking about the organization of the pedagogical process, to implement STREAM education principles, methodologies and approaches that are appropriate to the perceptions and learning conditions of preschool children, thus ensuring the desired learning outcomes and sustainability.
3. The sustainable development goals (SDGs) defined by UNESCO (2017) set out the preconditions for quality education, emphasizing the context and opportunities for lifelong learning at all levels of education, from early childhood to higher education. Therefore, the introduction of STREAM education in pre-primary education is essential for the achievement of the SDGs (UNESCO, 2017).
4. Teachers find the STREAM education strategy difficult to implement. Thus, the need to transform it from an interdisciplinary (one that

links) strategy to a multidisciplinary (one that encompasses several) one is connected to the content of teachers' professional development.

5. Preschool teachers indicate that both practical and theoretical knowledge would be indispensable and that the opportunity to hospitalize colleagues would be appreciated. Lack of materials and resources, too many children in a group, and not being able to implement project-based learning are identified as major challenges. The SDGs defined by UNESCO (2017) set out the preconditions for quality education, emphasizing lifelong learning contexts and opportunities at all levels of education, from early childhood to higher education. Introducing STREAM education in pre-primary education is therefore key to achieving the SDGs.

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AI statement: The authors stated that an AI-based grammar checker (Grammarly) was used for proofreading. No content generation was performed by AI.

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REFERENCES

Alper, I. T., & Ulutas, I. (2022). The impact of creative movement program on the creativity of 5-6-year olds. *Thinking Skills and Creativity, 46*, Article 101136. https://doi.org/10.1016/j.tsc.2022.101136

Asenahabi, B. M. (2019). Basics of research design: A guide to selecting appropriate research design. *International Journal of Contemporary Applied Researches*, 6(5), 76-89. https://www.ijcar.net/assets/pdf/Vol6-No5-May2019/07.-Basics-of-Research-Design-A-Guide-to-selecting-appropriate-research-design.pdf

Awang, Z., Yakob, N., Hamzah, A., & Talling, M. M. (2020). Exploring STEAM teaching in preschool using Fred Rogers approach. *International Journal of Evaluation and Research in Education, 9*(4), 1071-1078. https://doi.org/10.11591/ijere.v9i4.20674

Birzkops, J. (1999). *Music-making as the best developer of intellectual abilities*. Liesma Publishing House.

Branch, F. B., Hanushek, E. A., & Rivkin, G. (2015). School leaders matter. Measuring the impact of effective principals. *Education Next, 13*(1).

Cabinet of Ministers. (2018). Cabinet of Ministers regulation no. 716 regulations on state preschool education guidelines and model preschool education programs. *Latvian Official Gazette*. https://likumi.lv/ta/en/en/id/303371

Certus. (2016). Latvian competitiveness report. Information and communication technology sector in Latvia. *Certus*. http://certusdomnica.lv/agenda/ikt-nozare-izraviena-scenarijs

Cinar, S., Pirasa, N., & Sadoglu, G. (2016). Views of science and mathematics pre-service teachers regarding STEM. *Universal Journal of Educational Research, 4*(6), 1479-1487. https://doi.org/10.13189/ujer.2016.040628

DeJarnette, N. K. (2018). Implementing STEAM in the early childhood classroom. *European Journal of STEM Education, 3*(3), Article 18. https://doi.org/10.20897/ejsteme/3878

Dewey, J. (1910). *How we think*. D. C Heath & Co Publishers. https://doi.org/10.1037/10903-000

Gumenykova, T., Blazhko, O., Luhova, T., Troianovska, Y., Meluyk, S., & Riashchenko, O. (2019). Gamification features of STREAM education components with education robotics. *Applied Aspects of Information Technology, 2*(1), 45-65. https://doi.org/10.15276/aait.01.2019.4

Hart, J. E., & Lee, O. (2003). Teacher professional development to improve the science and literacy achievement of English language learners. *Bilingual Research Journal, 27*, 475-501. https://doi.org/10.1080/15235882.2003.10162604

Hubbard, K. (2021). Disciplinary literacies in STEM: What do undergraduates read, how do they read it, and can we teach scientific reading more effectively? *Higher Education Pedagogies, 6*(1), 41-65. https://doi.org/10.1080/23752696.2021.1882326

Knauf, H. (2019). Learning stories, pedagogical work and early childhood education: A perspective from German preschools. *Education Inquiry, 11*(2), 94-109. https://doi.org/10.1080/20004508.2019.1591845

Lian, B., Kristiawan, M., & Fitriya, R. (2018). Giving creativity room to students through the friendly school's program. *International Journal of Scientific & Technology Research, 7*(7).

Malik, M. N., Khan, H. H., Chofreh, A. G., Goni, F. A., Klemeš, J. J., & Alotaibi, Y. (2019). Investigating

students' sustainability awareness and the curriculum of technology education in Pakistan. *Sustainability, 11*(9). Article 2651. https://doi.org/10.3390/su11092651

Ministry of Education and Science. (2021). Study on the coverage of education provision and learner engagement in STEM 2021. *PPDK*. https://ppdb.mk.gov.lv/database/petijums-par-izglitibas-piedavajuma-parklajumu-un-izglitojamo-iesaisti-stem-joma-2/

Nguyen, N. T. (2023). The lived experiences of preschool children ages 3-4: The practices of independence in the case some pre-school in Vietnam. *Journal of Education, Society and Behavioural Science, 36*(9), 94-103. https://doi.org/10.9734/jesbs/2023/v36i91260

OECD. (2018). The future of education and skills. *OECD*. https://www.oecd.org/content/dam/oecd/en/publications/reports/2018/06/the-future-of-education-and-skills_5424dd26/54ac7020-en.pdf

Sanders, M. (2009). STEM, STEM education, STEMmania. *The Technology Teacher, 68*(4), 20-26.

Sarıkaya, M., & Coşkun, E. (2015). A new approach in preschool education: Social entrepreneurship education. *Procedia-Social and Behavioral Sciences, 195*, 888-894. https://doi.org/10.1016/j.sbspro.2015.06.368

Slišuniene, G. (2019). Possibilities for development of emotional intelligence in childhood in the context of sustainable education. *Discourse and Communication for Sustainable Education, 10*(1). https://doi.org/10.2478/dcse-2019-0010

STEM Task Force. (2014). INNOVATE: A blueprint for science, technology, engineering, and mathematics in California Public Education. *California Department of Education*. https://www.afterschoolnetwork.org/sites/main/files/file-attachments/innovate.pdf

Sujarwanto, E., Madlazim, & Ibrahim, M. (2019). Attitude, knowledge, and application of STEM owned by science teachers. *Journal of Physics: Conference Series, 1417*, Article 012096. https://doi.org/10.1088/1742-6596/1417/1/012096

Ultay, N., & Ultay, E. (2020). A Comparative investigation of the views of preschool teachers and teacher candidates about STEM. *Journal of Science Learning, 3*(2), 67-78. https://doi.org/10.17509/jsl.v3i2.20796

UNESCO. (2017). UNESCO moving forward the 2030 agenda for sustainable development. *UNESCO*. https://unesdoc.unesco.org/ark:/48223/pf0000247785/PDF/247785eng.pdf.multi

UNESCO. (2023). Curriculum in transformation mode: Rethinking curriculum for the transformation of education and education systems. *UNESCO*. https://unesdoc.unesco.org/ark:/48223/pf0000387188

Varthana. (2024). Why is STEM education crucial for future job opportunities? *Varthana*. https://varthana.com/school/why-stem-education-is-crucial-for-future-job-opportunities

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

Waters, T., McNulty, B. A., & Marzano R. J. (2005). *School leadership that works: From research to results*. ASCD.

Yeboah, A. K., & James, W. (2012). Transformational teaching experience of a novice teacher: A narrative of an award-winning teacher. Adult Learning, 23(4), 170-177. https://doi.org/10.1177/1045159512457354

Zelyurt, H. (2018). Analysis of the views of preschool teachers on their professional work. *World Journal of Education, 8*(5), 24-30. https://doi.org/10.5430/wje.v8n5p24