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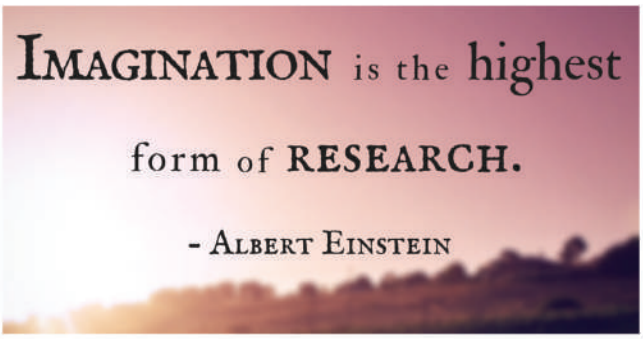

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CULTIVATING AND SUSTAINING A CULTURE OF CONTINUOUS IMPROVEMENT IN EDUCATIONAL PRACTICES IN HIGHER EDUCATION

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ABSTRACT

In an era marked by rapid technological advancement, evolving policy frameworks, and increasingly diverse learner needs, higher education institutions are compelled to move beyond episodic reforms and adopt sustainable approaches to improvement. This paper examines the significance of cultivating and sustaining a culture of continuous improvement in higher education, emphasizing its role in enhancing teaching quality, institutional effectiveness, and student success. Drawing on contemporary research and theoretical perspectives, the discussion highlights key dimensions of continuous improvement, including reflective practice, leadership commitment, shared vision, professional learning, innovation, accountability, and stakeholder engagement. The paper further explores the importance of supportive institutional structures, psychologically safe environments, feedback mechanisms, and data-informed decision-making in embedding improvement practices into everyday institutional functioning. By integrating cultural, leadership, and operational perspectives, the study underscores that continuous improvement is both a mindset and an organizational commitment essential for long-term academic relevance, resilience, and excellence in higher education.

Keywords: Higher Education, Educational Leadership, Professional Learning

Introduction

In the ever-evolving realm of education, the demand for constant enhancement and progress stands paramount. Educators and institutional leaders are increasingly required to respond to diverse learner needs while preparing students for a rapidly advancing, knowledge-driven society (UNESCO, 2015). Central to this responsibility is creating an academic environment that not only acknowledges change but also actively promotes sustained professional growth, reflective practice, and lifelong learning. Such an environment encourages continuous knowledge renewal, pedagogical creativity, and adaptive thinking, enabling institutions to remain responsive to technological developments and shifting societal expectations (Donald Schön, 1983). By fostering a culture of continuous learning, higher education institutions can strengthen academic excellence, enhance teaching effectiveness, and nurture learner engagement. This culture supports innovation, collaboration, and critical inquiry, allowing both educators and students to engage meaningfully with change rather than merely adapt to it (Michael Fullan, 2014).

Furthermore, a strong commitment to ongoing professional development empowers educators to refine instructional strategies, address diverse learning styles, and integrate innovative teaching practices. Continuous learning also promotes institutional flexibility, accountability, and resilience, thereby sustaining academic relevance and quality in higher education (OECD, 2019).

Creating and Sustaining a Culture of Continuous Improvement

Genuine transformation occurs when reflective insights are collectively examined and systematically applied to improve

institutional practices. In the contemporary educational landscape shaped by rapid technological advancements, evolving policy frameworks, and increasingly complex societal demands, the need to cultivate and sustain a culture of continuous improvement has become more critical than ever (UNESCO, 2023). Continuous improvement in education extends beyond isolated initiatives or surface-level reforms. It represents a deliberate and sustained commitment to enhancing all dimensions of the educational system, including teaching methodologies, curriculum design, assessment practices, and institutional processes. When embedded within the organizational culture, continuous improvement fosters collaboration, innovation, and responsiveness, enabling higher education institutions to adapt effectively to change and sustain academic relevance (OECD, 2024).

Administrative systems and institutional leadership play a decisive role in advancing continuous improvement within educational settings. Rather than addressing challenges through isolated or short-term initiatives, continuous improvement represents a sustained organizational commitment to embedding learning, innovation, and reflective practice into everyday institutional functioning. Recent empirical studies emphasize that continuous improvement operates both as a professional mindset and as a collective institutional responsibility, supported through collaboration, data-informed decision making, and shared accountability among educators, leaders, and stakeholders (Stoll, Brown, & Fink, 2022).

Creating a Culture of Continuous Improvement

Cultivating a culture of continuous improvement begins with establishing an environment in which experimentation, feedback, and reflection are viewed as integral to institutional growth. Research in higher education contexts indicates that engaging faculty, administrators, students, and academic support staff in identifying gaps, testing solutions, and refining practices leads to sustainable organizational learning and improvement (Bryk, Gomez, Grunow, & LeMahieu, 2021). Such collaborative approaches strengthen institutional capacity to respond effectively to evolving educational demands.

Leadership Commitment and Role Modelling

Educational leadership plays a critical role in shaping and sustaining a culture of continuous improvement. Studies show that leadership approaches characterized by collaboration, trust, and shared learning are more effective than directive models in fostering sustained improvement initiatives (Leithwood, Harris, & Hopkins, 2020). When leaders actively participate in reflective practice and professional learning alongside their teams, they model a commitment to growth and create psychologically safe environments that support innovation (Kools & Stoll, 2023).

Shared Vision and Strategic Alignment

A shared and clearly articulated vision serves as a guiding framework that aligns institutional practices with long-term improvement goals. Research suggests that when a vision for quality learning is co-created through participatory dialogue, it strengthens collective ownership and ensures alignment between institutional strategy and everyday practice (Hallinger, Nguyen, & Truong, 2023). Such alignment enables continuous improvement to become embedded within the organizational culture rather than functioning as a temporary reform effort.

A strong culture of continuous

improvement translates into a faculty environment where innovation in teaching is pursued not merely to meet accreditation requirements or institutional performance indicators, but because it is intrinsically connected to student learning and success.

Strengthening Educator Agency and Continuous Professional Learning

For continuous improvement to be sustained, educators must be empowered with professional autonomy and supported through ongoing learning opportunities. Capacity-building initiatives such as professional workshops, communities of practice, action research projects, and instructional coaching equip educators with the skills and confidence needed for continuous reflection and pedagogical innovation (Ferreira & Cunha, 2022). Equally important is the presence of psychological safety within institutions. Faculty and staff should feel secure in asking questions, acknowledging limitations, and experimenting with new approaches without fear of negative consequences. Research consistently highlights psychological safety as a foundational element of effective professional learning cultures, as it promotes open communication, experimentation, and collective growth (Edmondson, 2018; Edmondson & Kerrissey, 2025).

Institutional Structures Supporting Sustainable Educational Improvement

To make improvement efforts meaningful and measurable, educational institutions must establish supportive systems and structures. These include teaching and learning centres, curriculum review committees, quality assurance mechanisms, and data analytics platforms. When thoughtfully designed, such systems facilitate the integration of student feedback, classroom observations, and institutional data into informed decision-making. For instance, structured curriculum review cycles aligned with learning analytics can guide instructional redesign, student success dashboards can support targeted interventions, and educator portfolios can encourage reflective professional practice (Banihashem et al., 2022; Dennehy, Conboy, & Babu, 2023).

Developing Institutional Readiness for Change

Once the cultural foundations for continuous improvement are established, it becomes essential to strengthen the institutional conditions that enable sustained change. Building readiness for change involves implementing strategies that nurture innovation, encourage calculated risk-taking, and support continuous professional development. Institutions must deliberately create opportunities for experimentation and creative problem solving, helping educators view change not as a disruption but as a pathway to learning and improvement. Central to this process is the creation of psychologically safe environments where innovation is supported, and failure is treated as a learning opportunity. When educators are encouraged to test new ideas within a supportive framework, their confidence increases and resistance to change diminishes. Providing diverse and accessible professional development opportunities further enhances educators' ability to adapt to emerging challenges and strengthen their professional competencies. Through sustained investment in continuous learning, institutions can embed change readiness into everyday practice, ensuring improvement efforts are proactive, systemic, and enduring.

Embedding Continuous Improvement into Institutional Practice

While building capacity initiates change, sustaining a culture of continuous improvement requires embedding that capacity into institutional systems, behaviours, and routines. Long-term

sustainability depends on strong leadership, a shared vision, and a culture of accountability among all stakeholders. Leadership remains central to this process, not only by advocating for improvement but by modelling transparency, setting clear expectations, and providing consistent support to staff. Equally important is the development of a shared vision for improvement that unites all members of the institution around a common purpose. Such a vision aligns individual goals with institutional priorities and promotes collaboration across departments and roles. When stakeholders collectively commit to shared objectives, synergy is created, enabling coordinated and meaningful organizational advancement. Accountability further strengthens this process by encouraging individuals to take ownership of their roles and responsibilities. A culture of accountability promotes transparency in decision-making and reinforces continuous learning and adaptation as organizational norms. By embedding accountability at all levels of the institutional hierarchy, educational organizations cultivate commitment, responsibility, and sustained improvement, leading to long-term success.

Fostering Innovation and Creative Educational Practices

Sustaining continuous improvement also requires a deliberate embrace of innovation and creativity in educational practice. By fostering environments where new ideas are welcomed and experimentation is encouraged, institutions can respond effectively to evolving educational needs and thrive in dynamic contexts. Strategies that promote a growth mindset, support experimentation, and provide access to resources for innovation are essential in shaping future-oriented educational practices. Creative thinking enables educators and learners to approach challenges with openness and imagination, leading to the development of novel solutions and transformative teaching approaches. Integrating innovative ideas into educational frameworks enriches learning experiences and improves outcomes for all stakeholders. Through strategic planning, collaboration, and a sustained commitment to growth, institutions can achieve excellence by embedding innovation and creativity within their culture.

Recognizing Achievements and Leveraging Learning from Setbacks

Continuous improvement requires recognizing achievements while also learning from setbacks. Celebrating success plays a vital role in fostering motivation, morale, and positive organizational behaviour. Evidence suggests that organizations that consistently acknowledge accomplishments experience higher productivity and stronger engagement among their members (Gallup, 2023). At the same time, structured reflection on failures within collaborative learning communities enhances problem-solving skills and strengthens psychological safety, enabling individuals to share ideas and learn from mistakes without fear (Edmondson, 2019). Recognition can take many forms, from verbal appreciation during meetings to tangible rewards such as promotions or incentives. These practices reinforce positive behaviours, foster a sense of belonging, and motivate individuals to strive for continued excellence. Similarly, learning from failures requires intentional mechanisms such as feedback sessions, debriefings, and post-implementation reviews that examine what occurred, why it happened, and how future improvements can be made. By encouraging transparent discussions around setbacks, institutions transform challenges into opportunities for growth. Sharing lessons learned across teams further strengthens organizational learning, resilience, and

innovation. Through a balanced approach that values both success and failure as learning opportunities, institutions can sustain continuous improvement and long-term effectiveness.

Integrating Feedback Mechanisms and Evidence-Based Practices

To support cultural and leadership foundations, operational mechanisms such as feedback systems and data-informed practices are essential. Feedback and data function as interconnected tools that guide reflection, adaptation, and strategic action. Research consistently demonstrates that timely and constructive feedback enhances learning outcomes and performance across educational contexts (Hattie & Timperley, 2007; Shute, 2008). Effective feedback systems involve systematically collecting and analyzing input from students, educators, administrators, and parents. These mechanisms promote accountability, transparency, and shared responsibility while enabling institutions to identify strengths and areas for improvement. Continuous feedback supports responsiveness to emerging challenges and fosters inclusive participation in the improvement process.

Leveraging Data for Informed Educational Decision Making

Data serves as a cornerstone of continuous improvement by enabling evidence-based decision-making and monitoring progress. Through the analysis of learning analytics and performance indicators, educators can identify trends, tailor instructional strategies, and design targeted interventions. Data-informed practices support personalized learning, enhance student achievement, and improve institutional efficiency. When feedback systems and data-driven decision-making operate together, institutions strengthen their capacity to engage stakeholders in shared improvement efforts. This integrated approach ensures that continuous improvement is embedded across institutional practices rather than confined to isolated initiatives.

Collaborative Engagement of Educational Stakeholders

Sustaining continuous improvement requires meaningful engagement with all stakeholders, including students, parents, educators, and administrators. Stakeholders play a critical role in shaping improvement initiatives, as their perspectives inform decision-making and foster shared ownership. Effective engagement strategies include regular forums, surveys, collaborative committees, transparent communication, and participatory workshops that encourage co-creation of solutions. By actively involving stakeholders, educational institutions build strong partnerships, enhance trust, and ensure that improvement efforts align with community needs and expectations.

Conclusion

Cultivating and sustaining a culture of continuous improvement is no longer an optional initiative for higher education institutions; it is a strategic necessity in an increasingly complex and dynamic educational landscape. As demonstrated throughout this discussion, meaningful improvement extends beyond individual professional development and requires collective commitment, supportive leadership, and institutional systems that promote learning, reflection, and innovation. When continuous improvement is embedded into organizational practices, behaviours, and routines, institutions become more adaptable, responsive, and resilient to change. Effective leadership, shared vision, and accountability emerge as critical enablers of sustained improvement, while professional empowerment, psychological safety, and ongoing capacity building strengthen educators' ability to innovate and grow.

Furthermore, the integration of feedback mechanisms and data-informed practices ensures that improvement efforts are evidence-based, transparent, and aligned with learner needs. Equally important is the active engagement of stakeholders, whose participation fosters shared ownership and reinforces institutional relevance. Ultimately, a culture of continuous improvement transforms higher education institutions into learning organizations where success is celebrated, failures are treated as opportunities for growth, and innovation becomes a collective endeavour. By embracing continuous learning, reflective practice, and collaborative engagement, higher education institutions can sustain academic excellence, enhance student outcomes, and contribute meaningfully to societal development in a rapidly changing world.

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PERSPECTIVES ON THE PEDAGOGICAL POTENTIAL OF SELF-REGULATED LEARNING (SRL) IN INTEGRATED TEACHER EDUCATION PROGRAM (ITEP)

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ABSTRACT

The Integrated Teacher Education Programme (ITEP) represents a major reform in teacher preparation by emphasising integrated learning, reflective practice, and professional competence. Within this reform context, self-regulated learning (SRL) holds particular pedagogical relevance, as it enables pre-service teachers to manage their learning, reflect on experience, and adapt to professional demands. This paper presents a conceptual examination of the pedagogical potential of SRL within ITEP. Drawing on established theories of SRL and recent empirical and review literature in teacher education, digital learning, and professional development, the paper argues that SRL should be treated as a core pedagogical outcome rather than an assumed learner characteristic. The discussion explores how SRL aligns with the structural and pedagogical principles of ITEP. The paper further examines the implications of embedding SRL for teacher educators, institutions, and policy frameworks. By positioning SRL as a developmental and pedagogical capacity, this paper contributes to ongoing discussions on strengthening teacher education and supporting sustained professional learning among future teachers.

Keywords*: S*elf-regulated learning, SRL, Integrated Teacher Education Programme, ITEP, Teacher education, Pedagogy, Professional learning.

Introduction

Teacher education systems across the world are being reshaped by changing expectations of teachers' professional roles. Contemporary classrooms demand teachers who are reflective, adaptive, and capable of continuous learning rather than routine delivery of content. In response to these demands, many teacher education reforms have shifted focus from transmission-based preparation toward integrated and competency-oriented programmes (Darling-Hammond, 2017). In India, the Integrated Teacher Education Programme (ITEP) represents a structural and pedagogical shift in this direction. ITEP aims to integrate disciplinary knowledge, pedagogical understanding, and professional practice within a single programme framework (National Council for Teacher Education [NCTE], 2021). The programme emphasises early field exposure, reflective engagement, and learner-centred pedagogy. Longitudinal studies that follow pre-service teachers across the full duration of ITEP can provide insights into how self-regulated learning develops over time and how different programme components influence this development (Jansen et al., 2019). Methods such as reflective narratives and interviews can capture the complexity of professional learning that may not be evident in quantitative measures (Rodriguez-Gomez et al., 2024). Studies examining how technology supports planning, reflection, and feedback can inform the design of learning environments that strengthen self-

regulatory development (Yurchenko et al., 2023). As a result, learners may complete programme requirements without developing the capacity to plan, monitor, and evaluate their own learning processes. This gap highlights the need for pedagogical approaches that support learner autonomy and reflective engagement.

Self-regulated learning (SRL) offers a useful conceptual lens for addressing this need. SRL refers to learners' active involvement in managing their cognitive, motivational, and behavioural processes to achieve learning goals (Zimmerman, 2002). Research has shown that SRL supports academic achievement, persistence, and deeper learning in higher education contexts (Jansen et al., 2019). In digital and blended environments, SRL becomes particularly important as learners are required to navigate learning tasks with reduced external structure (Xu et al., 2023). Within teacher education, SRL holds added significance. Pre-service teachers must not only regulate their own learning but also develop an understanding of how learning occurs in professional practice.

Studies suggest that SRL supports reflective teaching, professional judgement, and adaptive classroom practice (Brenner, 2022). However, SRL is often treated as an implicit learner trait rather than an explicit pedagogical goal in teacher preparation programmes. The present paper responds to this gap by examining the pedagogical potential of SRL within the context of ITEP. Rather than proposing a new empirical model, the paper offers a conceptual perspective that integrates SRL theory with the structural and pedagogical features of ITEP.

Conceptual Principles of the ITEP

Self-regulated learning is commonly described as an active and constructive process through which learners set goals, apply strategies, monitor progress, and reflect on outcomes. Early theoretical work emphasised that learning is not merely a response to instruction but involves intentional control over cognitive and motivational processes (Pintrich, 2004). Zimmerman's social-cognitive model conceptualises SRL as a cyclical process consisting of forethought, performance, and self-reflection phases (Zimmerman, 2008). During forethought, learners analyse tasks and set goals; during performance, they employ strategies and monitor their actions; during reflection, they evaluate outcomes and adjust future behaviour. This cyclical view highlights SRL as a dynamic and developmental process rather than a fixed ability.

Research evidence supports the effectiveness of SRL across learning contexts. Meta-analytical studies indicate that SRL interventions have a positive effect on learning outcomes in higher education, particularly when learners are encouraged to reflect on their learning strategies and progress (Guntur & Purnomo, 2024). Systematic reviews further show that SRL plays a key role in online and technology-mediated learning environments, where learners must manage time, resources, and motivation independently (Faza & Lestari, 2025). SRL is also influenced by contextual and social factors. Perceived social support, feedback practices, and assessment design shape learners' engagement with self-regulatory processes (Martínez-López et al., 2023).

In teacher education settings, mentoring relationships and reflective dialogue contribute to the development of SRL by providing structured opportunities for self-evaluation and professional growth (van der Linden et al., 2023). Importantly, SRL is closely linked to professional learning. Studies in teacher education suggest that self-regulatory skills support the development of instructional competence, reflective judgement, and professional identity (Rodriguez-Gomez et al., 2024). These findings indicate that SRL is not limited to academic success but plays a central role in preparing learners for complex

professional roles. Within this conceptual framework, SRL can be viewed as a pedagogical capacity that develops through sustained engagement with meaningful learning tasks, reflective practices, and supportive learning environments. This perspective aligns closely with the aims of integrated teacher education programmes such as ITEP.

Integrating SRL with ITEP Pedagogy

The Integrated Teacher Education Programme (ITEP) is designed to address long-standing concerns about fragmentation in teacher preparation. Traditional models often separate disciplinary knowledge, pedagogy, and practice into distinct phases, which can limit the coherence of professional learning. ITEP seeks to overcome this limitation by offering an integrated curriculum that combines subject knowledge, pedagogical understanding, and school-based experience within a unified programme structure (NCTE, 2021). A defining pedagogical principle of ITEP is competency-based learning.

ITEP also places strong emphasis on early and continuous field exposure. Pre-service teachers are introduced to school contexts from the initial stages of the programme, allowing them to observe, reflect, and gradually participate in teaching practices. Such exposure creates opportunities for experiential learning, where theory and practice inform each other through reflection and analysis (Wilson et al., 2020). Another important feature of ITEP is its encouragement of interdisciplinary learning. By integrating perspectives from subject disciplines, education studies, and professional practice, the programme supports holistic understanding.

Pedagogical Potential of SRL in ITEP

The pedagogical structure of ITEP offers multiple opportunities to embed self-regulated learning in meaningful ways. Goal setting and planning can be integrated into coursework through learning plans, reflective tasks, and project-based assignments. These practices encourage pre-service teachers to clarify learning intentions and take responsibility for managing their academic and professional tasks (Kong & Lin, 2023). During field experiences and practicum, self-regulated learning can be supported through structured reflection and guided feedback. Pre-service teachers often face complex classroom situations that require adaptive decision-making. Reflective journals, mentoring conversations, and peer discussions can help learners analyse their actions and refine their strategies over time (van der Linden et al., 2023).

Teacher educators play a critical role in fostering SRL within ITEP. When educators model reflective thinking, explain their instructional decisions, and encourage learner autonomy, they create conditions that support self-regulatory development. Such pedagogical practices shift the focus from compliance with instructions to meaningful engagement with learning processes (Schunk & Zimmerman, 2011). Technology also offers valuable support for integrating SRL within ITEP. Digital and cloud-based platforms can provide spaces for reflection, resource management, and self-paced learning. Research on cloud-supported learning environments suggests that such tools can help learners plan tasks, track progress, and engage in reflective documentation when used with clear pedagogical intent (Utami et al., 2022). In this way, SRL does not function as an isolated skill but becomes embedded within the pedagogical practices of ITEP.

Educational Potential of SRL in ITEP

One of the key pedagogical strengths of self-regulated learning in ITEP lies in its capacity to support reflective teaching. Reflection is central to professional growth, as it enables teachers to examine their assumptions, evaluate

instructional choices, and respond to learner needs. SRL provides a structured framework through which reflection becomes a regular and purposeful practice rather than an occasional activity (Seufert, 2018). SRL also contributes to the development of learner autonomy among pre-service teachers. As learners gain experience in planning and monitoring their learning, they become more confident in making instructional decisions. This autonomy is particularly important in contemporary classrooms, where teachers are expected to adapt curricula and instructional strategies to diverse contexts (Yu, 2023).

Professional identity formation is another area where SRL shows strong pedagogical potential. Through sustained engagement with self-evaluation and reflective judgement, pre-service teachers begin to see themselves as active professionals capable of continuous learning. Research indicates that such self-perceptions are closely linked to motivation, commitment, and long-term engagement with the profession (Martínez-López et al., 2024). SRL further supports classroom readiness by encouraging adaptive expertise. Rather than relying on fixed routines, self-regulated teachers are more likely to respond flexibly to classroom challenges. This adaptability is particularly relevant in technology-rich and evolving educational environments (Akbar, 2021). SRL promotes a lifelong learning orientation. Teachers who develop self-regulatory skills during initial preparation are better positioned to engage in ongoing professional development and respond to future changes in curriculum, technology, and policy. Studies in teacher education highlight that such orientation strengthens the sustainability of professional practice (Ofemile, 2015).

Educational and Research Implications

The integration of self-regulated learning within ITEP has several important implications for teacher education practice.

- Curriculum design in ITEP should move beyond content organisation and explicitly incorporate learning tasks that support planning, monitoring, and reflection. When SRL-oriented activities are embedded across coursework and practicum, pre-service teachers can gradually develop control over their learning processes rather than relying on external regulation (Krismanto & Tahmidaten, 2022).
- The role of teacher educators requires reorientation. Educators need to function not only as content experts but also as facilitators of learning. By encouraging reflective dialogue, supporting learner choice, and providing formative feedback, teacher educators can help pre-service teachers develop habits that sustain professional learning. Evidence from technology integration studies suggests that such facilitative roles improve instructional understanding and learner engagement (Wilson et al., 2020).
- Assessment practices within ITEP should be aligned with the development of self-regulation. Process-oriented assessment approaches, such as reflective portfolios and self-assessment tasks, can encourage learners to evaluate their progress and identify areas for improvement. Research on formative assessment highlights that such alignment supports deeper engagement with learning and professional competence (van der Linden et al., 2023).

Recommendations for policymakers

Based on the conceptual analysis presented, the following policy recommendations are proposed:

- Policy documents should identify self-regulated learning as a core pedagogical principle of ITEP, ensuring that institutions provide structured support for its development.

- National and institutional policies should mandate regular professional development programmes that help teacher educators understand and implement SRL-oriented pedagogies.
- Assessment guidelines should emphasise formative and reflective practices that support learning processes alongside performance outcomes.
- Policies should encourage the pedagogical use of digital and cloud-based platforms that support reflection, feedback, and self-paced learning rather than focusing solely on access to technology (Utami et al., 2022).
- Quality assurance mechanisms should include indicators that capture the development of self-regulated learning among pre-service teachers to ensure consistent implementation across institutions.

Conclusion

The Integrated Teacher Education Programme represents an important step toward strengthening teacher preparation through integrated and competency-oriented learning. Within this context, self-regulated learning offers significant pedagogical potential by supporting reflective practice, learner autonomy, and professional growth. This paper has argued that SRL should be treated as a central pedagogical capacity developed through curriculum design, instructional practice, and assessment approaches rather than as an assumed learner attribute. By aligning SRL with the structural and pedagogical features of ITEP, teacher education programmes can better prepare future teachers to manage complex learning environments and sustain professional development. Positioning SRL as a core element of teacher education can contribute to the long-term quality and effectiveness of teaching practice. The perspectives offered in this paper aim to support ongoing dialogue among educators, researchers, and policymakers committed to strengthening teacher education in contemporary educational contexts.

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ATTITUDE OF SECONDARY SCHOOL TEACHERS TOWARDS INTEGRATED EDUCATION

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ABSTRACT

Integrated education is one of the most essential educational programmes in all countries. It has given more opportunities to all students in the education system. The success of Integrated education depends on various factors, in which the teacher is the most significant factor. To become a competent and successful inclusive teacher, it is necessary to have the required knowledge, skills and positive attitude. In the present study, an attempt has been made by the investigators to study the 'Attitude of secondary school teachers towards Integrated education' in the district of Thoothukudi, Tamil Nadu. In the present study, the investigators have used the descriptive survey method. The sample consists of 150 secondary school teachers in the district of Thoothukudi. The stratified random sampling method has been used for the collection of data. The investigators have developed a questionnaire by themselves to measure the attitude of secondary school Teachers towards the Integrated education. For the analysis of data, the mean, S.D., and t-test have used in the present study. The findings of this study indicate that the attitude of secondary school teachers towards Integrated education is neither favourable nor unfavourable, that is, moderate. This study also indicates that there is a significant difference between Rural and Urban teachers in their attitude towards Integrated education.

***Keywords**:* Teacher Attitude, Integrated Education, Secondary School Teacher

Introduction

In India, "integrated education" has been provided mainly to students with mild disabilities who are considered "easy" to include in regular school programs. Students with severe disabilities, in most cases, do not attend a school, or in rare cases, attend a special school. Disabled people of all ages and/or those learners with 'Special Educational Needs' labels are being placed in mainstream education settings with some adaptations and resources, but on condition that the disabled person and/or the learner with 'Special Educational Needs' labels can fit in with pre-existing structures, attitudes, and an unaltered environment. In the "Integrated education" model, whenever possible, students with disabilities attend a regular school. The emphasis, however, is upon the student to fit the system rather than the system to adapt to meet the educational needs of a student. Integrated education is designed to promote the retention of children with disabilities in the regular school system. Children were to be provided with financial support for books, stationery, school uniforms, transportation, special equipment, and aids.

Integrated education is a stepping stone towards an educational system that includes all children in the educational process. Integrated education is called special education, which originally set out to meet the needs of learners who were being traditionally excluded from the school or otherwise marginalized within the classroom. Integrated education happens when

children with and without disabilities join and learn all together in the same classes. Research shows that when a child with disabilities attends classes beside peers who do not have disabilities, good things happen. It does not just involve a focus on the barriers to knowledge by learners, but it is about the improvement of the details of the cultures, policies, and practices in the education system and educational institutions, so that they are approachable to the diversity of learners and value them equally. Today, integrated education or inclusion of education is a great concept that aims to achieve the quality of education and to encourage students to enroll in the education system.

Integrated Education: Meaning & Definition

Integrated education is based on fundamental human rights. Integrated education means that schools should include all children regardless of the physical, intellectual, social, emotional, linguistic or other conditions. It should include all types of children, such as gifted, backwards, and mentally retarded, learning disabilities, socio-economically disadvantaged students, etc. It is an approach that fulfils the learning needs of all children, youth and adults who are vulnerable to marginalization and exclusion from the educational system.

Why is Integrated Education Important?

An inclusive system provides a greater chance for the educational system for all children and is instrumental in changing an inequitable attitude. Schools provide the outline for a child's first relationship with the outside world of their families; they facilitate the development of social relationships and interaction. Respect and understanding grow when students of diverse abilities and backgrounds play, socialize, and learn together. Education that excludes and segregates perpetuates inequity against traditionally marginalized groups. When education is more inclusive, then the students' concept of civic participation, employment, and community life will increase.

The Basic Elements of Integrated Education

The main element of Integrated education is the three types.

Use of Teaching Assistants or Specialists:

These teaching staff have a very positive perspective on being inclusive. In practice, a specialist who helps the teachers to address the needs of all the students is working inclusively. A specialist who pulls students out of class to work with them individually regularly is not.

Inclusive Curriculum:

An inclusive curriculum includes locally relevant subjects and contributions by marginalized and alternative groups. It avoids binary narratives of good and bad, and allows for adapting the curriculum to the learning styles of children with special education needs.

Parental Involvement:

Most schools strive for some level of parental involvement, but it is often limited to e-mail, home, and special parent-teacher conferences. In such a situation, the diverse school system, inclusion means thinking about several ways to reach out to the parents on their own terms.

Review of Related Literature

Khan, A. T. (2011) has conducted a study on, **"*Investigation of secondary school teachers' attitudes towards and knowledge about Integrated education in Bangladesh*".** The quantitative and qualitative findings of this study reveal that secondary school teachers have mostly favourable or supportive attitudes towards Integrated education for children with special educational needs. This study also concludes that Most of the Bangladeshi secondary school teachers had positive feelings about the inclusion of such children in the mainstream classes.

Belapurkar, M. A. & Phatak, V. S. (2012) have conducted a study on **"*Knowledge and attitude about Integrated education of school teachers*".** The result of the study is that

the school teachers, both rural and urban, have a slight negative attitude about training and curriculum in teachers' education with respect to Integrated education. This Study also indicates that The School teachers are not clear about government policies and planning for integrated education.

Das, A. & Bhatnagar, N. (2014) have conducted a study on ***"Attitude of secondary school teachers toward Integrated education in New Delhi"***. The major findings of the study were that the teacher in Delhi had a positive attitude toward the inclusion of students with special needs. This study also indicates that the teachers who had a more positive attitude about Integrated education were Male.

Galovic, D. & Brojcin, B., & Glumbric, N. (2014) have conducted a study on *"The attitude of teachers toward Integrated education in Vojvodina"*. The results show that, in general, the participants had a neutral attitude towards Integrated education and more positive expectations regarding the outcomes of inclusion. This study also indicates that high school and preschool, as well as teachers with previous positive experience working in an inclusive environment, reported a more positive attitude toward IE.

Kaur, M. & Kaur, K. (2015) have conducted a study on *"Attitude of Secondary School Teachers towards Integrated education"*. The findings of the study showed that there was no significant difference between male and female secondary school teachers with respect to their attitude towards Integrated education. This study also indicates that there was a significant difference between rural and urban secondary school teachers with respect to their attitude towards Integrated education**.**

Kumar, A. (2016) has conducted a study on "*Exploring the Teachers' Attitudes towards Integrated Education System"*. The major findings of the study show that there is a significant difference between rural and urban teachers towards Integrated education. This study also concluded that there is a significant difference between male & female teachers and low-experience and high-experience teachers towards Integrated education.

Need and Significance of the Study

- ❖ To know the attitude of Teachers of Secondary Schools towards integrated education in the district of Thoothukudi, Tamil Nadu.
- ❖ To conduct this study, the present Researchers have constructed Attitude Questionnaires (for the secondary school Teachers), which will be very helpful for other researchers to conduct future research in the field of Integrated education.
- ❖ The findings of the present study will also raise awareness of the State and Central Government regarding the Integrated education.
- ❖ The findings related to the attitude of secondary school teachers towards the Integrated education will be very helpful for the Government and Policy Makers to take some important steps and to modify the different policies and ideas of Integrated education, for the successful implementation of the school education system in India.

Objectives of the Study

1. To find out the attitude of the secondary school teachers towards integrated education.
2. To find out the significant difference between male and female secondary school teachers regarding their attitude towards integrated education.
3. To find out the significant difference between arts and science secondary school teachers regarding their attitude towards integrated education.
4. To find out the significant difference between rural and urban secondary school teachers regarding their attitude towards integrated education.

5. To find out the significant difference between the attitude of the teachers having high teaching experience and less teaching experience regarding their attitude towards integrated education.

Hypothesis of the Study

H01: There would not be a favourable attitude among secondary school teachers towards integrated education.

H02: There is no significant difference between male and female secondary school teachers regarding their attitude towards integrated education.

H03: There is no significant difference between arts and science secondary school teachers regarding their attitude towards integrated education.

H04: There is no significant difference between rural and urban secondary school teachers regarding their attitude towards integrated education.

H05: There is no significant difference between the teachers having high teaching experience and less teaching experience regarding their attitude towards integrated education.

Operational Definitions of the Terms

Integrated Education

Integrated education means all students, young people with or without disabilities, are able to learn together in regular free school provision, school and community educational settings, with a suitable arrangement of support services.

Attitude

The investigators have used the term "Attitude" in the sense that the opinions or views which were reflected by the secondary school teachers about the different aspects related to Integrated education.

Secondary Schools

The term "Secondary Schools" means those types of schools that are engaged to impart secondary education (classes 8-10) to the students under the West Bengal Board of Secondary Education (WBBSE).

Teacher

The term "Teacher" means those persons who are engaged to teach the students at the secondary school level under the West Bengal Board of Secondary Education (WBBSE).

Methodology of the Study

The researchers have used the descriptive type survey method in the present study. Therefore, naturally, the investigators have used different tools, techniques, strategies and methods of descriptive survey research to collect, analyze, and interpret the data.

Population of the Study

All the secondary school teachers in Thoothukudi district of Tamil Nadu comprised the population of the study.

Sample of the Study

The sample collected 150 secondary school teachers.

Sampling Technique

The stratified random sampling technique has been applied in the selection of the sample.

Tool of the Study

The investigators have used a self-made questionnaire as a tool for collecting the data in the present study. The Scale consists of 30 items with a combination of Positive items (18) and Negative items (12). The scale has been constructed, followed by a five-point Likert scale, i.e., Strongly Agree (SA.), Agree (A), Neutral (N), Disagree (D), and Strongly Disagree (SD).

Techniques of Data Analysis

The present study investigators have used Mean, SD, and t-test for analysing the data.

Analysis and Interpretations

H01: There would not be a favourable attitude among secondary school teachers towards integrated education.

Table.1. Shows the Number, Mean and S.D of the Total Teachers

Group	Number	Mean	S. D
Teachers	150	106.12	9.10

Table.2. Shows the Level of Attitude of the Teachers on the basis of Cut- off Point

Scores	Frequency	Percentage	Level of Test Anxiety
Above-139.46	6	4%	Favourable
Between-106.48 to 139.46	135	90%	Moderate
Below-106.48	9	6%	Unfavourable
Total	**150**	**100%**	

Based on the Cut-off Point, from the above table, we can see that out of the total 150 Teachers, 4% Teachers have scored above 115.22, 90% Teachers have scored between 97.02 to 115.22, and 6% Teachers have scored below 97.02 on the Test of Attitude measuring Questionnaire constructed by the researcher for the Secondary school Teachers. Therefore, we can see that the maximum percentage (90%) of the Teachers have scored between 97.02 to 115.22, which indicates that the level of Attitude towards Integrated education in secondary school teachers is neither favourable nor unfavourable, that is, Moderate in the district of Thoothukudi, Tamil Nadu.

$H0_2$: There is no significant difference between male and female secondary school teachers regarding their attitude towards integrated education.

Table 3. Shows the Difference between Male and Female Secondary School Teachers Regarding Their Attitude towards the Integrated Education

Group/ Variable	N	Mean	SD	Mean Difference	SED	df	t-value	Result
Male	81	106.80	10.376	1.484	1.491	148	0.995	Not Significant at 0.05 level
Female	69	105.32	7.323					

**Significant at 0.05, ** Significant at 0.01, and @ Not Significant (Table Value of 't' against df (148) at 0.05 level = 1.98 & at 0.01 level = 2.61)*

From Table -3, it is found that the calculated 't'value (0.995) is less than the table value of 0.05 & 0.01 levels of significance (1.98 at 0.05 level of significance). Hence, the null Hypothesisis accepted at the 0.05 levels and the result is not significant. So, we can broadly say that there is no significant difference between male and female secondary school teachers in their attitude towards Integrated education. But on the basis of their obtained Mean Score, we can say that the Attitude of Integrated education of male teachers is comparatively more favourable than the female teachers in the district of Thoothukudi.

$H0_3$: There is no significant difference between arts and science secondary school teachers regarding their attitude towards integrated education.

Table.4. Shows the difference between Arts and Science Secondary School Teachers regarding their Attitude towards the Integrated education

Group/ Variable	N	Mean	SD	Mean Difference	SED	df	t-value	Result
Arts	96	107.16	9.831	2.878	1.535	148	1.875	Not Significant at 0.05 level
Science	54	104.28	7.290					

**Significant at 0.05, ** Significant at 0.01 and @ Not Significant (Table Value of 't' against df (148) at 0.05 level = 1.98 & at 0.01 level = 2.61)*

From the table-4, it can be found that the Calculated t" value" (1.875) is less than the table value of 0.05 level of significance (1.98 at 0.05 level of significance). Hence the null hypothesis is accepted at 0.05 levels and the result is not significant. So, it indicates that there is no significant difference between Arts and Science secondary school teachers in their attitude towards Integrated education. But on the basis of their obtained Mean Score, we can say that the Attitude of Integrated education of Arts teachers is comparatively more favourable than the Science teachers in the district of Thoothukudi.

$H0_4$: There is no significant difference between rural and urban secondary school teachers

regarding their attitude towards integrated education.

Table-5. Shows the difference between Rural and Urban Secondary School Teachers regarding their Attitude towards the Integrated education

Group/ Variable	N	Mean	SD	Mean Difference	SED	Df	t- Value	Result
Rural	74	107.78	11.44	3.28	1.46	148	2.24*	Significant at 0.05 level
Urban	76	104.50	5.611					

**Significant at 0.05, ** Significant at 0.01 and @ Not Significant (Table Value of 't' against df (148) at 0.05 level = 1.98 & at 0.01 level = 2.61)*

From the table-5, it can be found that the Calculated t‟ value (2.24) is higher than the table value of 0.05 level of Significance (1.98 at 0.05 level of Significance). Hence the null Hypothesis is rejected at 0.05 levels and the result is significant. So, it indicates that there is statistically significant difference between Rural and Urban Secondary School teachers in their attitude towards Integrated education. But on the basis of their obtained Mean Score, we can say that the Attitude of Integrated education of rural secondary school teachers is comparatively more favourable than the urban secondary school teachers in the district of Thoothukudi.

H0$_5$: There is no significant difference between the teachers having high teaching experience and less teaching experience regarding their attitude towards integrated education.

Table 6. Shows the difference between less experience and high experience secondary school teachers regarding their attitude towards the integrated education

Group/ Variable	N	Mean	SD	Mean Difference	SED	df	t-value	Result
Less	73	106.08	8.296	0.74	1.492	148	0.049	NS
High	77	106.16	9.858					

**Significant at 0.05, ** Significant at 0.01 and @ Not Significant (Table Value of 't' against df (148) at 0.05 level = 1.98 & at 0.01 level = 2.61)*

From the table 6 we can see that the Calculated t‟ value (.049) is lower than the table value 0.05 level of significance (1.98 at 0.05 level of significance). For this reason, the null hypothesis is accepted at 0.05 and the result is not significant. So, we can say that there is no significant difference between less experience teachers and high experience teachers in their attitude towards Integrated education. But on the source of their obtained Mean Score, we can say that the Attitude of Integrated education in high experience secondary school teachers is comparatively more favourable than the less experience secondary school teachers in the district of Thoothukudi.

Major Findings of the Study

- The first finding of the present study is that the attitude of secondary school teachers towards Integrated education is neither favourable nor unfavourable, but moderate in the district of Thoothukudi, Tamil Nadu.
- The second finding of the present study is that there is no significant difference between male and female secondary school teachers with respect to their attitude towards Integrated education. it means that the gender has no influence on the attitude of secondary school teachers towards integrated education in the district of Thoothukudi, Tamil Nadu.
- The third finding of the present study is that there is no significant difference between arts and science secondary school teachers in their attitude towards integrated education. it means that the stream of subject teachers has no influence on the attitude of secondary school teachers towards integrated education in the district of Thoothukudi, Tamil Nadu.
- The fourth finding of the present study is that there is a statistically significant difference between rural and urban secondary school teachers in their attitude towards integrated

education. It means that the locality of secondary school teachers has a significant influence on the attitude of secondary school teachers towards integrated education in the district of Thoothukudi, Tamil Nadu.

- The fifth finding of the present study is that there is no significant difference between the teachers having high teaching experience and less teaching experience regarding their attitude towards integrated education. it means that the experience of teachers has no significant influence on the attitude of secondary school teachers towards integrated education in the district of Thoothukudi, Tamil Nadu.

Conclusion

Integrated education is one of the most educational prograkmmes in the education system. It gives equal opportunity to all children in a regular classroom. The result of the study is that the secondary school teachers have a moderate attitude towards Integrated education. So, this result indicates that the implementation of Integrated education among secondary school teachers is needed to apply knowledge-based and application-based programming. Therefore, it is important that the teachers give clear ideas about various issues and challenges of Integrated education, like human resource deficit, lack of collaboration between special teachers and regular school teachers, and the most significant is the training programmes in Integrated education. The goal of education is incomplete without inclusive and integrated education of the challenged group of students.

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NAVIGATING THE DIGITAL LANDSCAPE FOR PERSONS WITH VISUAL IMPAIRMENT

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ABSTRACT

In today's fast-paced digital world, digital literacy is becoming increasingly crucial for all individuals with visual impairment. By enabling individuals to interact with, comprehend, and access digital information, digital literacy fosters social participation and autonomy. People with visual impairment encounter inaccessible digital interfaces, limited access to assistive devices, and insufficient inclusive design on well-known digital platforms. This narrative review investigates the literature and research on personalised instructional strategies, inclusive digital practices, and assistive technologies. The findings indicate significant disparities in access and participation, underscoring the necessity of evidence-based training and equity-focused initiatives.

***Keywords**:* Digital Landscape, Digital literacy, Visual impairment, Digital divide, Empowerment

Introduction

The transition from the Information Age to the Digital Age has redefined how we engage with knowledge and information. This shift has given rise to the concept of digital literacy, which extends beyond the mere use of computers to encompass a broader set of skills necessary to navigate the modern technological landscape. As Becker (2018) noted, digital literacy now functions as a gateway to education, employment, social inclusion, and independent living. Dobson and Willinsky (2009) further emphasise that the digitisation of information, from printed materials to online platforms, has transformed how individuals learn, work, and communicate in the 21st century.

While digital technology offers a wealth of opportunities, it also brings forth substantial barriers for individuals with visual impairments. These barriers are not merely technological but deeply rooted in social structures, educational policies, and digital design standards that often fail to accommodate their unique needs. Persons with visual impairment constitute a heterogeneous group with varying degrees and types of functional vision loss, each requiring specific forms of support. As outlined by Venkatesan (2004), visual impairment may be physical, sensory, cognitive, psychological, or even invisible, highlighting the need for diverse and adaptable digital literacy solutions. Despite the rapid expansion of digital tools and online resources, many people with visual impairment are systematically excluded from participating fully in the digital space. This exclusion is exacerbated by what researchers term the "digital divide", a term referring to disparities in access to and effective use of digital technologies. Chinner et al. (2017) argue that such disparities can have far-reaching consequences, leading to inequalities in education, employment, and social engagement.

Inaccessible website designs, inadequate support for assistive technology, and a general lack of awareness about inclusive practices among developers all contribute to this persistent gap.

However, the solution lies not only in the development of better technology but also in the implementation of targeted and inclusive digital literacy initiatives. These should focus on equipping persons with visual impairment with the necessary skills and confidence to navigate digital environments independently. According to Harris et al. (1998), structured, supportive learning environments that emphasise task reduction, role modelling, and reinforcement can significantly enhance the digital capabilities of students with disabilities. Both educators and parents play a pivotal role in encouraging positive attitudes and fostering digital skill development among learners with visual impairments.

The Digital Divide: Structural Barriers to Access

Despite the technological strides made in recent decades, the gap between those who can fully engage with digital tools and those who cannot remains significant, especially for persons with visual impairment. This phenomenon, widely recognised as the "digital divide," is not merely a matter of unequal access to devices or internet connectivity; it also reflects disparities in digital literacy, skill acquisition, platform accessibility, and the availability of assistive technologies. For individuals with visual impairments, the consequences of this divide are far-reaching, affecting education, employment, healthcare access, and social participation.

According to Chiner et al. (2017), individuals with visual impairment are often excluded from digital spaces due to poor design choices that disregard accessibility guidelines. Many mainstream websites and apps do not support screen readers or offer alternatives for non-visual navigation. Images without alt-text, complex visual layouts, and interactive forms without keyboard compatibility are just a few examples of barriers. These challenges are compounded by the lack of standardised accessibility protocols across platforms and service providers.

Moreover, the cost of assistive technology presents another formidable hurdle. Tools such as braille displays, screen magnifiers, and refreshable braille devices are often prohibitively expensive, especially in low-income and rural settings. Financial constraints further widen the gap between those who can afford to adopt digital technologies and those who cannot.

Compounding these material limitations are logistical and infrastructural challenges. As Scanlan (2022) observed, persons with disabilities, including those with visual impairment, face additional burdens when trying to access public internet facilities. Physical barriers, such as inaccessible transportation, a lack of trained support staff, or environments not designed for independent navigation, prevent equal participation. Meanwhile, people without disabilities typically enjoy seamless access to digital environments, reinforcing structural inequities.

Compaine (2001) contends that efforts to close the digital divide must go beyond simply providing internet access. True digital equity demands a multifaceted strategy that includes policy reform, inclusive design, affordable technology, and training programs tailored to the needs of persons with disabilities. Without such efforts, the promise of the digital age will remain unrealised for millions of individuals who are systemically excluded due to their visual impairments.

Digital Literacy for Persons with Visual Impairment: Concepts, Challenges, and Opportunities

Digital literacy among persons with visual impairment must be understood within the

framework of accessibility. Unlike their sighted peers, visually impaired individuals rely on specialised assistive technologies and adaptive strategies to access digital content. These include screen readers, braille displays, screen magnifiers, speech recognition software, and voice command tools. Although these tools empower individuals to participate more fully in the digital world, they are not always compatible with mainstream websites, apps, and educational platforms. Consequently, digital spaces often remain only partially accessible or entirely unusable for persons with visual impairment.

The challenges they face are multi-layered. First, technical barriers such as incompatible software and non-responsive digital interfaces limit access. Many websites still lack proper semantic structuring, alt-text for images, or logical tabbing order, all of which are essential for screen reader navigation. Even when accessibility features are available, they may not be well-documented or easy to use without prior training. This presents a significant hurdle for individuals who are just beginning to develop their digital skills.

Second, economic barriers hinder access to essential assistive devices and training programs. Many screen readers, braille notetakers, and adaptive hardware come at a high cost, making them unaffordable for individuals in low-income settings or under-resourced educational institutions. Without financial support or subsidised access, persons with visual impairment may struggle to keep up with technological advancements, further deepening the digital divide.

Third, social and educational factors also impact digital literacy. Lack of exposure to digital tools during early education, insufficient teacher training, and limited curriculum integration all contribute to lower levels of digital competence among visually impaired students. According to Arslantas and Gul (2022), while many university students with visual impairments possess strong technical skills, they often struggle with social communication and content creation due to insufficient guidance and practice in those areas. Despite these obstacles, digital literacy represents a powerful tool for empowerment. As Caton and Chapman (2016) emphasise, tailored training programs that incorporate visual aids, interactive modules, and individualised learning approaches can significantly enhance learning outcomes for persons with visual impairment. These programs must be adapted to various levels of visual ability and incorporate flexible teaching strategies that combine auditory, tactile, and kinesthetic learning modalities.

Luft et al. (2009) also highlight the importance of equipping educators with the skills necessary to support digitally inclusive classrooms. Training for teachers should include the use of accessible communication tools such as captioned video conferencing, screen sharing with descriptive narration, and virtual learning environments that accommodate diverse user needs. When educators themselves are digitally literate and accessibility-aware, they can become powerful enablers of change in the lives of their students.

Importantly, digital illiteracy or the lack of basic digital skills poses a particular threat to marginalised populations. Datta et al. (2018) note that persons with visual impairment who lack access to digital literacy training face greater risks of social isolation, unemployment, and information poverty. This underscores the need for inclusive digital education that goes beyond technical instruction to foster confidence, self-advocacy, and critical media literacy.

In addition, digital literacy has the potential to strengthen the self-efficacy of persons with visual impairment. Mastering digital tools contributes to a sense of competence, independence, and control over

one's environment. As these individuals gain confidence in their ability to access services, engage with peers, and advocate for their rights, they become better positioned to navigate societal structures that were previously inaccessible.

To bridge the gap in digital literacy, training programs must be inclusive, affordable, and context-sensitive. Programs should begin early in a learner's education and evolve alongside their needs and the changing digital landscape. Instructional strategies must be differentiated to reflect varying levels of visual ability, language proficiency, and prior digital exposure. Furthermore, the inclusion of peer mentoring and community-based learning models can provide emotional support and motivation, especially for first-time learners.

Methodology: Framework for Narrative Review

This narrative review employs a qualitative approach to synthesise existing literature related to digital literacy and its impact on persons with visual impairment. The aim is to understand the state of digital inclusion, identify critical barriers and opportunities, and propose meaningful interventions. The review integrates diverse scholarly sources, including journal articles, books, policy reports, and conference proceedings, to form a comprehensive understanding of the subject.

A rigorous selection process was followed to identify relevant materials. Online databases such as Google Scholar, JSTOR, PsycINFO, and PubMed were systematically searched using keywords including "digital literacy," "visual impairment," "assistive technology," "inclusive education," and "accessibility." A total of 196 publications were selected based on their relevance, originality, methodological robustness, and alignment with the core themes of the review. Only those written in English and published under recognised identifiers such as International Standard Serial Numbers (ISSN) and International Standard Book Numbers (ISBN) were considered. Non-scholarly content, such as newsletters, opinion pieces, unpublished dissertations, and non-peer-reviewed materials, was excluded to maintain academic rigour.

To ensure reliability in data collection and thematic coding, inter-observer validation was conducted. Two independent reviewers coded at least 25% of the sample using a predefined framework. The inter-rater reliability was high ($r = 0.94$), indicating consistent agreement in the interpretation of content. This approach minimised personal bias and enhanced the objectivity of the analysis. Data analysis was carried out using thematic synthesis and supported by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to ensure transparency and replicability. Cohen's effect size analysis was used, where applicable, to quantify the strength of the findings. SPSS software facilitated statistical tests and data visualisation. Results were categorised into harvest plots based on publication type, date of publication, methodological approach, and thematic focus.

Studies Tailored to Persons with Visual Impairment

The literature review yielded a wealth of insights specific to the digital experiences of persons with visual impairment. These studies emphasise the importance of accessible technologies, inclusive pedagogical strategies, and capacity-building programs to improve digital literacy outcomes for this population.

Role of Assistive Technology

A recurring theme across the studies is the transformative impact of assistive technologies on digital access. Tools such as screen readers, speech-to-text converters, braille displays, and voice recognition software have been instrumental in enabling persons with visual impairment to engage with digital environments independently. These technologies bridge the

sensory gap by translating visual information into auditory or tactile formats.

University Students with Visual Impairment

Arslantas and Gul (2022) conducted a study on visually impaired university students, revealing that while many possess advanced technical skills, such as operating screen readers and navigating accessible software, they often struggle with creating digital content or engaging in interactive communication. This disparity underscores the need for balanced digital literacy programs that go beyond technical competence to include social and communicative aspects of digital life.

Training for Educators and Support Staff

Another key insight is the necessity of training educators in digital inclusion practices. Luft et al. (2009) advocate for preparing teachers to use inclusive technologies such as captioned video conferencing platforms, screen-reading software, and visually supported learning applications. Teachers need to understand both the functionalities of assistive tools and the pedagogical strategies to implement them effectively.

Customised Learning Approaches

Caton and Chapman (2016) highlight the value of personalised instruction in digital literacy programs. Learners with visual impairment benefit from training that adapts to their specific cognitive and sensory needs. This could include interactive tutorials with audio feedback, braille-based instruction, or multimodal content delivery using audio and tactile stimuli.

Social Empowerment through Digital Skills

Developing digital literacy also enhances social participation and psychological well-being. When people with visual impairment can navigate digital platforms independently, they are better equipped to connect with peers, share knowledge, and engage in community life. This empowerment fosters greater self-efficacy, reduces isolation, and enables fuller participation in civic activities.

Findings: Summary of Key Insights

The review of literature reveals that while technological progress has expanded digital opportunities globally, the benefits are not being distributed equitably, especially for persons with visual impairment. Despite an increasing availability of assistive tools and a growing awareness of inclusive education, systemic and structural barriers continue to restrict digital participation for many in this population.

The most critical finding is that persons with visual impairment are disproportionately affected by the digital divide, which stems not only from physical inaccessibility and financial hardship but also from institutional inertia and a lack of inclusive design in mainstream technologies. Websites, mobile applications, educational portals, and workplace platforms often fail to comply with accessibility guidelines, making them inaccessible or only partially usable by individuals relying on screen readers or braille interfaces.

Training programs tailored specifically to the needs of persons with visual impairment have shown promise. Customised learning environments that emphasise hands-on practice, peer support, and modular content delivery tend to produce better learning outcomes. However, the literature suggests that such programs are few and often lack scalability. There is a pressing need to integrate these approaches into national education systems and teacher training frameworks. Another consistent theme is the correlation between digital literacy and self-efficacy. As individuals acquire digital skills, their confidence, and independence, will improve. This empowerment allows persons with visual impairment to not only access services and information but also participate meaningfully in academic, professional, and social spaces. In this way, digital literacy is more than a technical competence; it is a foundation for inclusion, equity, and self-determination.

Towards the Future Paths: Advancing Digital Literacy for Persons with Visual Impairment

Looking ahead, the future of digital literacy for persons with visual impairment offers immense promise, but realising this potential requires planning, cross-sector collaboration, and an unwavering commitment to inclusion. The coming years will likely be defined by continued innovation in artificial intelligence (AI), adaptive technologies, and universal design principles. These trends can significantly improve digital access and empower persons with visual impairment to participate fully in all aspects of life.

One of the most transformative developments lies in the evolution of deep learning (DL) and intelligent systems that personalise the user experience. Interactive educational platforms powered by AI can be tailored to meet the learning preferences, pace, and needs of individual users. For persons with visual impairment, this could mean intelligent screen readers that adjust narration speed based on user comfort, or learning management systems that automatically reformat content for accessibility. As Anisimova (2020) suggests, equipping educators and learners with foundational knowledge in animation, game-based learning, programming basics, and networking will be essential to keep pace with future digital demands.

Liu et al. (2020) emphasise the need for new educational paradigms that seamlessly integrate assistive technologies into pedagogical models. The traditional one-size-fits-all approach is inadequate; instead, flexible, modular, and learner-centred strategies should be adopted. Adaptive learning platforms, those that adjust content delivery based on continuous feedback, hold particular promise for building confidence and competence among learners with visual impairment.

Advancements in assistive technology are expected to play a pivotal role in reducing barriers. Future innovations may include enhanced voice-controlled systems, AI-driven braille translation tools, wearable guidance devices, and even real-time object recognition software that allows users to interpret visual surroundings. Eye-tracking devices and gesture-based commands, already in early use, could become more refined, enabling more intuitive navigation of digital environments.

Moreover, inclusive design must become the standard rather than the exception. This involves embedding accessibility into the DNA of all digital products and services. Features like keyboard navigation, customizable text-to-speech settings, and tactile feedback should be baseline requirements, not optional add-ons. Development teams must adopt user-testing models that actively include persons with visual impairment to ensure that products meet real-world accessibility needs.

In tandem, policy reform and institutional support are needed to institutionalise accessibility. Governments, educational institutions, and corporate organisations must develop and enforce digital accessibility standards. Funding must be allocated for the procurement and maintenance of assistive technologies, training of educators, and curriculum development that includes digital literacy components relevant to students with disabilities.

Online communities and peer networks will also become vital pillars of support. Virtual forums, collaborative platforms, and social media groups can serve as hubs where persons with visual impairment share experiences, offer technical tips, and engage in advocacy. These digital spaces provide a sense of belonging and empowerment, encouraging users to develop their skills in a supportive, judgment-free environment.

Global advocacy for digital inclusion will likely intensify. Organisations working in disability rights, education, and technology must join forces to raise awareness of the digital divide and influence global standards. As Buckingham (2015) notes, sustainable change occurs when digital inclusion is treated as a public responsibility and woven into national development goals and educational policies.

Looking toward the future, Sa et al. (2021) envision a digital landscape that is not only more accessible but also more equitable, creative, and collaborative. However, achieving this vision requires a holistic strategy that includes infrastructure, training, content diversity, user-friendly interfaces, and robust legal protections. Bridging the digital divide is not solely about technological innovation—it is about ensuring dignity, equity, and opportunity for all.

Conclusion

The path forward calls for a collective commitment to building digital environments where persons with visual impairment are not merely accommodated but fully empowered. This will involve continued research, user-centred innovation, accessible education, and proactive policymaking. If we succeed in these efforts, digital literacy can truly become a transformative tool, enabling persons with visual impairment not only to find their way through the digital world but to lead confidently within it.

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AI IN EDUCATION: INTEGRATING AI IN TEACHING AMONG THE HIGHER SECONDARY TEACHERS

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ABSTRACT

The integration of Artificial Intelligence (AI) in education is rapidly transforming traditional teaching methodologies. The integration of artificial intelligence (AI) in education represents a transformative shift in pedagogical practices. This article examines the engagement of AI tools among educators, drawing from recent research findings to understand the opportunities, challenges, and barriers that shape AI adoption in educational settings. While higher secondary teachers generally recognise AI's potential for enhancing personalised learning and administrative efficiency, significant gaps persist in practical knowledge, training, and institutional support. This analysis provides insights into effective strategies for fostering AI literacy and promoting successful integration among emerging educators.

Keywords: Artificial Intelligence, AI tools, AI literacy

Introduction

Artificial Intelligence (AI) is playing a major role in changing education worldwide. Tools like intelligent tutoring systems, automated grading systems, and personalised learning environments are being increasingly used to support teachers and improve student results. The success of these tools largely depends on teachers' understanding and their willingness to use them in their teaching. Higher secondary teachers, who are mostly recent graduates, are a key group that can influence how AI technologies are integrated into education. The fast growth of AI provides a unique chance for change in education. From intelligent tutoring systems to automated assessment tools, AI applications promise to improve teaching and learning in the future. However, effectively integrating AI technologies relies heavily on educators' knowledge, attitudes, and readiness to adopt new teaching methods. Teachers are in a special position during this technology-driven change. They enter the profession as digital natives in an era of rapid AI advancements and bring fresh ideas about technology to educational settings. Unfortunately, little is known about their awareness and beliefs regarding AI tools in their teaching, which is an important gap for educational leaders and policymakers.

AI Awareness among Higher Secondary Teachers

Recent research shows that higher secondary teachers of Tamil Nadu are generally familiar with basic AI concepts, but their understanding of specific educational applications is limited. This reflects a trend seen in several studies, where shallow awareness does not lead to deep understanding or practical skills. The awareness gap is especially clear when looking closely at specific AI tools and their use in the classroom. Most teachers reported using Chat GPT mainly

for administrative tasks, such as lesson planning, report writing, and preparing presentations. They do not use it as a teaching tool. This pattern indicates that although teachers recognise AI's capabilities, they may not have the teaching knowledge needed to use these tools effectively for student learning.

Knowledge Fragmentation

A significant challenge highlighted in the literature is the fragmented knowledge of AI among higher secondary teachers. Instead of developing a complete understanding of AI's educational potential, many educators only have knowledge about specific tasks related to certain tools or applications. This fragmentation creates barriers to systematic integration and may limit teachers' ability to make informed choices about how and when to use AI tools. The fragmentation issue is worsened by the rapid development of AI, which makes it hard for teachers to keep up with the latest tools and their functions. Without structured training and support, higher secondary teachers might find it difficult to stay current with technological advances and miss opportunities for effective integration.

Attitude of Higher Secondary Teachers towards AI Integration

Despite their limited awareness, higher secondary teachers usually have a positive view of AI integration in education. Various studies show favourable or neutral attitudes among early-career educators who recognise AI's potential to improve teaching and student outcomes. This optimistic outlook reflects teachers' openness to innovation and their acknowledgement of technology's role in modern education. However, their positive attitudes come with practical concerns and ethical considerations. Teachers express enthusiasm for AI's potential while also recognising challenges related to implementation, fairness, and academic integrity. This cautious optimism indicates that educators are thoughtful about adopting technology and understand the need to carefully consider AI's impact on teaching and learning.

Recognition of Pedagogical Benefits

There are several key benefits of using AI in education

Personalised Learning Support: AI in education offers promising benefits, including personalised instruction, real-time feedback, and administrative efficiency **(Luckin et al., 2016; Holmes et al., 2019).** Teachers see AI's ability to provide adaptive feedback, tailored learning experiences, and different instructional strategies that meet various student needs. This aligns with modern teaching approaches that emphasise individualised and inclusive education.

Administrative Efficiency: AI's potential to automate routine tasks, such as grading and record-keeping, appeals to teachers, who often struggle with time management and administrative workload. This improvement allows teachers to focus more on direct teaching and student interaction.

Enhanced Engagement: Teachers value AI's ability to give real-time feedback, create gamified learning experiences, and offer interactive content that boosts student motivation and involvement. These aspects are supported by research on effective teaching practices.

Resource Expansion: AI tools provide access to vast content libraries, multilingual support, and quick creation of educational materials, which can be especially beneficial for teachers as they develop their resource collections.

Challenges and Barriers to Adoption

Professional Skill Gaps

A major barrier to using AI among higher secondary teachers is the lack of AI-specific teaching knowledge. AI literacy is a significant obstacle, as teachers often feel unprepared to integrate AI tools into their classroom practices meaningfully. This skill gap includes both

technical know-how with AI tools and the ability to match AI capabilities with teaching goals. This challenge is more pronounced because traditional teacher training programs have been slow to include AI literacy in their curricula. New teachers enter the field with limited exposure to AI applications in education, creating a significant learning curve that must be addressed through professional development and ongoing support. However, research also highlights challenges such as a lack of technical skills, resistance to change, and ethical concerns (Zawacki-Richter et al., 2019).

Ethical and Integrity Concerns

Teachers also express considerable concerns about the ethical implications of using AI in educational settings. A primary worry is academic integrity, with teachers questioning how to maintain valid assessments when students have access to AI-powered tools. These concerns mirror larger discussions about AI's effects on the authenticity of learning and the need for new assessment designs. Other ethical issues include potential bias in AI algorithms, dependence on technology, and the risk of reducing human interaction in education. These concerns show that teachers are thoughtful about adopting technology and recognise the need for careful ethical consideration.

Infrastructure and Institutional Barriers

Practical limits significantly hinder AI adoption among teachers. Inadequate technological infrastructure, a lack of available devices, and insufficient technical support create substantial challenges. These issues are particularly severe in under-resourced schools, where teachers need technological support to enhance their effectiveness. Institutional barriers include unclear policies regarding AI use, a lack of administrative support, and no systematic professional development programs. Without clear guidance and institutional backing, teachers may hesitate to try out AI tools or may use them incorrectly.

Role Anxiety and Professional Identity

Some teachers worry that integrating AI might threaten their professional identity or diminish the human aspects of teaching. This anxiety reflects wider societal concerns about AI's influence on jobs and professional roles. For new teachers still figuring out their professional identity, these worries can be more intense and could hold them back from engaging with AI technologies.

Recommendations for Enhancing AI Integration

Targeted Professional Development: Effective AI integration requires structured professional development that addresses both technical skills and teaching applications.

Hands-on Training: Create modular workshops that blend practical training on AI tools with teaching theory and subject-specific uses. These sessions should let teachers experiment and reflect in low-pressure settings.

Ongoing Mentorship: Connect teachers with experienced colleagues who can offer guidance on using AI and share successful strategies. This mentoring should continue beyond initial training to encourage sustained adoption.

Communities of Practice: Establish professional learning communities that focus on AI integration, so teachers can exchange experiences, solve challenges, and collaborate on innovative uses.

Institutional Policy Development

Clear institutional policies are vital for supporting AI adoption while addressing ethical issues:

Usage Guidelines: Create comprehensive policies that detail appropriate AI applications, assessment standards, and data privacy measures. These guidelines should be regularly updated to reflect new technologies and best practices.

Ethical Frameworks: Establish clear ethical guidelines that deal with bias, transparency, and academic integrity while promoting responsible

AI use.

Infrastructure Investment: Ensure adequate technological resources, including reliable internet access, suitable devices, and technical support.

Curriculum Integration

AI literacy should be included systematically in teacher preparation and professional development:

TPACK Framework: Help teachers build technological, pedagogical, and content knowledge specifically related to AI applications. This framework offers a structured way to understand the complex relationships among technology, teaching, and content.

Gradual Implementation: Support gradual adoption by starting with specific, clearly defined AI applications before moving on to more complex uses. This allows teachers to build their confidence and skills step by step.

Evidence-Based Practice: Provide access to research on the effectiveness of AI and encourage decisions about technology usage based on data.

Support Systems

Strong support systems are crucial for successful AI integration:

Technical Support: Ensure availability of technical help for troubleshooting and maintaining AI tools.

Resource Libraries: Create collections of AI tools, lesson plans, and implementation guides tailored to various subjects and grade levels.

Evaluation Tools: Offer frameworks for assessing the effectiveness of AI integration and its effect on student learning outcomes.

Policy Implications

The findings suggest several important policy considerations.

Teacher Preparation Standards: Education policy should require AI literacy in teacher preparation programs. This ensures new educators start their careers with the necessary skills.

Professional Development Funding: Allocate resources specifically for AI-focused professional development. This will support ongoing teacher learning.

Infrastructure Investment: Prioritise improvements in technological infrastructure in schools that serve teachers.

Conclusion

AI tools can significantly impact teaching and learning, but their effectiveness depends on teacher preparedness. Future research should explore the long-term effects of AI on teaching practices. Although these educators possess valuable insights on AI adoption, barriers such as skill gaps, ethical issues, infrastructure limitations, and the need for institutional support hinder progress. A coordinated approach at both individual and institutional levels is essential to foster AI literacy and meaningful technology use. Addressing these challenges can enhance teaching effectiveness and student outcomes. As AI technologies continue to evolve, ongoing investment in the integration of AI in education will be crucial for benefiting all students.

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