



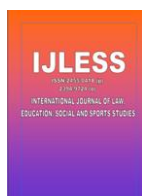
The Influence of Digital Tools on the Development of Critical Thinking and Problem-Solving Skills among M.Ed. Students

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[DOI: 10.33329/ijless.12.S2.656](https://doi.org/10.33329/ijless.12.S2.656)



Abstract

In the 21st-century education landscape, the role of digital tools in shaping pedagogical practices is increasingly significant. For student teachers in Master of Education (M.Ed.) programme, the integration of digital technologies offers a dynamic platform to foster critical thinking and problem-solving abilities. This article explores how digital tools enhance these essential life skills, identifies key tools used in teacher education, and discusses strategies for effective integration. The findings underscore the need for curriculum innovation and digital pedagogical training to ensure M.Ed. students become adaptive, reflective, and competent future educators.

Key words: Digital tools, critical thinking skills, problem solving skill, M.Ed. Students.

Introduction

The education system is undergoing a profound transformation driven by digital technology. In this context, teacher education programs such as the M.Ed. must evolve to equip future teachers with both digital competencies and higher-order thinking skills. Critical thinking and problem-solving, once viewed as auxiliary outcomes, are now foundational skills for navigating complex classroom environments. This article examines how digital tools-when meaningfully integrated into teaching and learning-support the development of these skills in M.Ed. students.

Review of related literature

1. **Gitadewi, (2023)** investigated the study on the topic of optimizing digital literacy through problem-based learning models to improve student critical thinking skills. It showed how digital literacy within problem-based learning (PBL) frameworks enhances critical thinking among secondary school students. The findings suggest that PBL, when combined with digital tools, fosters active problem-solving and critical analysis skills.

2. **Yu, L & Zin Z.M, (2023)** conducted a study on the title The critical thinking - oriented adaptations of problem- based learning models. A systematic review. The systematic review analyzes adaptations of

PBL Models aimed at enhancing critical thinking in higher education it identifies key factors contributing to successful integration of critical thinking components within PBL. The study offers insights into effective strategies for embedding critical thinking into teacher education curricula through digital means.

3. **Awedh, M.Mueen, A. Zafar B & Manzoor, U, (2015)** conducted a study on the title using socrative and smart phone for the support of collaborative learning. The study investigates the impact of using socrative and smart-phones to support collaborative learning, findings are positive affects on student engagement and learning performance.

Need and significance of the study

In an era where digital competence and critical thinking are foundational to effective teaching, this study offers timely insights into the transformative role of digital tools in teacher education. Specifically, it addresses the integration of technology within M.Ed. programs and its impact on the development of critical thinking and problem-solving skills among pre-service teachers. The study contributes to the growing body of research on digital pedagogy by providing empirical and conceptual evidence of how digital tools-such as simulations, collaborative platforms, and gamified learning environments-foster analytical reasoning and reflective practice.

Conceptual Framework

Critical thinking involves the ability to analyze information objectively and make reasoned judgments, while problem-solving refers to the process of identifying solutions to complex or unfamiliar situations. Digital tools such as collaborative platforms, simulations, educational apps, and interactive media provide opportunities for exploration, hypothesis testing, and reflective inquiry-core elements of both skills. The theoretical foundation draws from constructivist and experiential learning paradigms, where learners construct knowledge through interaction with digital environments.

Operational definitions.

Digital Tools

Digital tools in education, often referred to as e - learning or edtech, encompasses a wide range of technologies and platforms used to support teaching and learning. These tools can include digital documents, online learning platforms interactive content, and various applications.

Example : Google classrooms, moodle, teachLIVE, Padlet, mindmaster, Microsoft teams, zoom

Critical Thinking skills

These skills refer to the cognitive abilities that enable M.Ed. students to actively and systematically analyze, evaluate, and synthesize information in order to make reasoned judgments and information decisions.

Components : Interpretation, inference, explanation, analysis, self - regulation.

Problem Solving skills

In this context of this study, refer to the ability of M.Ed. students to identify, analyze, and develop effective solutions to complex or unfamiliar educational scenarios.

Components : Recognizing problems, generating alternative strategies, evaluating possible outcomes and implementing appropriate actions.

M.Ed. Students

M.Ed. students as defined in this study are individuals enrolled in a Master of education (M.Ed.) program, which is a post graduate level teacher education course designed to deepen professional knowledge, enhance pedagogical skills and develop research competencies.

Digital Tools and Their Educational Value

1. Learning Management Systems (e.g., Moodle, Google Classroom): Facilitate asynchronous discussions, project-based tasks, and peer assessments.
2. Simulation Tools (e.g., TeachLivE, Edmodo Virtual Labs): Offer real-world teaching scenarios for applied problem-solving.
3. Gamified Learning Tools (e.g., Kahoot!, Quizizz): Motivate through feedback and encourage rapid analysis.
4. Mind Mapping Tools (e.g., Padlet, MindMaster): Support critical comparisons and cause-effect reasoning.
5. Collaborative Platforms (e.g., Microsoft Teams, Zoom): Promote teamwork and collective decision-making.

Impact on M.Ed. Students

1. Enhanced Engagement and Motivation: Digital tools encourage active participation.
2. Reflective Thinking: Features like forums and e-portfolios improve metacognition.
3. Collaborative Learning Environments: Facilitate teamwork and shared reasoning.
4. Feedback and Iterative Improvement: Instant feedback helps improve problem-solving strategies.

Challenges and Considerations

While digital tools offer great potential, several challenges remain:

- Digital Divide: Unequal access to reliable internet and devices.
- Teacher Preparedness: Lack of formal training in digital pedagogy.
- Over-Reliance on Technology: Can distract from deep learning if not guided properly.

Recommendations

1. Curriculum Integration: Embed tools into pedagogy courses and practicum.
2. Professional Development: Conduct workshops on digital strategies.
3. Reflective Digital Portfolios: Use multimedia for documenting learning.
4. 21st-Century Skills Assessment: Make critical thinking and problem-solving explicit outcomes.

Conclusion

Digital tools are not mere supplements but essential instruments for nurturing the cognitive skills M.Ed. Students need in modern classrooms. By promoting active engagement, collaborative inquiry, and reflective practice, these tools significantly enhance critical thinking and problem-solving capabilities. However, their impact depends on intentional integration, adequate training, and equitable access. As teacher education continues to evolve, the fusion of technology and pedagogy must become a cornerstone of preparing future educators for the challenges of a rapidly changing world.

References

- [1]. Awedh, M.Mueen, A.Zafar.B & Manzoor, U. (2015). Using socrative and smartphones for the support of collaborative learning. arxiv:1501.01276(cs).
- [2]. Gitadewi.A.J (2023),Optimizing digital literacy through problem based learning models to improve students critical thinking skills. *International Journal of currant educational research*. 3(2),DOI : <https://doi.org/10.53621/ijpcerv312.379>.
- [3]. Yu.L & Zin Z.M (2023). The critical thinking oriented adaptations of problem-based learning Models :A systematic review. *Frontiers in education* 8 -2023/. <https://doi.org/10.3389/feduc.2023./39987>