Equipping School Teachers with Technology: A Qualitative Study Based On a Training Program Conducted for School Teachers on Technology for Education

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Abstract

In response to the growing need for digital competence in the education sector, a targeted training programme was conducted for a selected group of school teachers in Sri Lanka, aiming to enhance their capacity to integrate technology into classroom practices. Delivered through a series of interactive workshops and hands-on sessions, the training equipped participants with practical skills and pedagogical strategies for technology-enhanced instruction. Emphasis was placed on contextual relevance, accessibility, and scalability of digital tools within the Sri Lankan school system. For this pilot study, the participant group was selected from two of the leading schools in Sri Lanka, which had adequate resources and infrastructure for both teachers and students to access digital tools. Therefore, the programme was designed with the assumption that the participants had a basic level of digital literacy to follow the programme with a moderate level of effort. The programme included learning management systems, artificial intelligence (AI) and emerging technologies for education, automated assessments, interactive teaching tools, digital content creation, and data privacy concerns. However, during the early sessions of the programme it became evident that the initial assumption about the digital literacy of the teachers proved to be inaccurate. The resource persons had to adjust accordingly and spend more time than expected to get the participants familiar with basic tasks, including logging into email accounts and a learning management system. This descriptive study presents the findings of this programme, which provides insights into how in-service training programmes for school teachers should be designed and delivered. Feedback from the participants was collected through surveys and focus group interviews. The preliminary response from the participants indicated increased confidence in using online platforms, designing digital learning activities, and leveraging AI-driven tools to support diverse learner needs. It is evident that even though emerging AI-powered technologies are in high demand and generate enthusiasm, competence in basic technology is essential for teachers. This study offers a reusable model for professional development of teachers that aligns with national education goals and global digital literacy standards, which would benefit the teaching community at a broader level.

Keywords: Technology for teachers, Digital literacy, AI for education, Life-long learning, In-service training, Professional development of teachers, Technology-enhanced learning, ICT and digital skills, Teacher training and support.

1 Introduction

The integration of digital technologies in education has become a global imperative, driven by the rapid digital transformation across all sectors and the evolving needs of 21st-century learners. In the educational context, technology serves not only as a tool for delivering content but also as a catalyst for pedagogical innovation, learner engagement, and inclusive learning practices [1]. However, the effective use of educational technology largely depends on the preparedness and competence of teachers, who act as the primary facilitators of technology-enhanced learning. Therefore, building digital literacy and technological pedagogical competence among educators is essential to ensure that the potential of digital tools is fully realised in classroom settings [2].

In Sri Lanka, as in many developing nations, the integration of information and communication technologies (ICT) into school education has received increased attention, particularly in the wake of global disruptions such as the COVID-19 pandemic. The pandemic underscored the urgent need for digitally literate teachers who can adapt to hybrid or fully online learning environments and support students through diverse digital platforms [3]. Although the Sri Lankan government has made policy-level efforts to introduce digital transformation in education and improve digital infrastructure [4], the professional development of teachers in terms of technological integration has often been inconsistent and insufficient.

Many in-service teachers, particularly those trained before the digital era, face significant challenges in acquiring and applying digital skills within their pedagogical practice [5].

The concept of technology-enhanced learning (TEL) encompasses a range of digital innovations, including learning management systems (LMS), artificial intelligence (AI)-based educational tools, multimedia content creation, and data analytics to support teaching and learning. However, the successful adoption of TEL requires more than the availability of tools. It demands a shift in pedagogical thinking and a supportive ecosystem that promotes continuous professional learning [6]. In this light, professional development programmes must be carefully designed to align with the teachers' current levels of digital literacy, contextual realities, and the national education framework.

This paper presents a qualitative study based on a teacher training programme conducted in Sri Lanka, aimed at equipping school teachers with technological skills for educational contexts. Unlike typical training programmes that assume a foundational level of digital proficiency among teachers, this programme exposed a significant gap between expected and actual digital competence among participants. The majority of the selected teachers, despite being from the two most financially able schools in Sri Lanka, struggled with basic tasks such as accessing email accounts or navigating an LMS, highlighting a critical misalignment in assumptions around teacher readiness. This situation echoes findings in other contexts where digital infrastructure exists but is underutilized due to a lack of user competence and confidence [7].

As digital technologies evolve with AI, machine learning, and adaptive learning systems reshaping educational paradigms, it becomes increasingly important to ensure that teachers are not only digitally literate but also pedagogically equipped to harness these tools in meaningful ways. The training programme described in this study sought to address these needs through a combination of hands-on workshops, peer learning, and reflective practices. In particular, emphasis was placed on accessibility, contextual relevance, and the scalability of digital solutions in the Sri Lankan education system. Furthermore, participant feedback and observations provided valuable insights into the barriers and enablers of technology adoption among teachers.

This study contributes to the growing body of literature on professional development of teachers by offering a model that is adaptable to different contexts and scalable within the national education system. It advocates for the integration of digital literacy as a core component of in-service teacher training and calls for a more nuanced understanding of the challenges faced by educators in developing countries. In doing so, it aligns with global standards such as UNESCO's ICT Competency Framework for Teachers, which emphasizes the interplay of knowledge, skills, and attitudes required for effective technology integration in education [8].

Ultimately, equipping teachers with relevant digital skills is not only a matter of technological advancement but a necessary step toward educational equity, lifelong learning, and the preparation of students for a digitally mediated world.

2 METHODOLOGY

2.1 Structure of the Programme

The programme was conducted for three days in the physical mode of delivery. The medium of delivery was English, with occasional explanations done in one of the native languages of Sri Lanka (Sinhala). The pool of resource persons consisted of Professors and Senior Lecturers specializing in the field of Computer Science & Engineering. The first two days were consecutive, and the third day was conducted after a two-week gap. It was expected that the participants would get an adequate amount of time to reflect on the content and activities during the break provided.

2.2 Tools and Equipment

The programme was conducted in a computer lab, and each participant was given access to a computer with internet access. Access to content was provided on the Moodle platform. Access to the tools and frameworks used in the sessions was provided through the Internet.

2.3 Programme Content

The detailed breakdown of sessions and their content is given in Table 1.

TABLE 1: Content plan for the training programme

Day	Session	Content	Activities
One	1	Introduction to the Programme	Lecture
	2	Leveraging Moodle for Teaching	Lecture + Hands-on
	3	AI & Emerging Tech in Education	Lecture + Hands-on
	4	Digital Assessments & Student Engagement	Lecture + Hands-on
	5	Interactive Teaching Tools & Digital Content Creation	Lecture + Interactive
	6	Action Planning & Reflection	Discussion
Two	7	Introduction to AI in Education	Lecture
	8	Leveraging Moodle for AI-Enhanced Teaching and AI-Powered Assessment & Feedback	Lecture + Hands-on
	9	Continuation of Session 8	Lecture + Hands-on
	10	AI for Educational Content Creation	Lecture + Interactive
	11	AI Tools for Classroom Management and Engagement	Lecture + Interactive
Three	12	Data Security & Information Protection in AI-Driven Education	Lecture
	13	AI for Educational Content Creation and Data-Driven Decision-Making in Education	Lecture + Hands-on
	14	Continuation of Session 13	Lecture + Hands-on
	15	Ethical Considerations for Using AI in Education	Lecture + Interactive
	16	Future Trends & AI Integration Strategies	Lecture + Interactive
	17	Discussion on Future Action	Discussion

2.4 Participants

The participants consisted of teachers from two leading schools in Sri Lanka. The age range was 35-55, and 67% of the participants were female. This gender ratio was expected as the annual school census of Sri Lanka by the Ministry of Education reported that 75.20% of the teacher population was female [9]. Their medium of instruction at the school is Sinhala. The participants represented a diverse range of subjects they teach, including Mathematics, Science, Languages, Literature, and aesthetic subjects.

2.5 Collection of Data

The data collection was conducted at the end of the third day by means of a Feedback activity created on the Moodle course. The participants were instructed to access the course and provide their responses and feedback.

2.5.1 Questionnaire

TABLE 2: End of programme questionnaire

	Q. No.	Type	Question
Experience in using technology for teaching before the programme	1	Yes/No	Have you been using technology in teaching?
	2	Text	If Yes, what tools have you been using?
	3	Likert scale	Rate your level of confidence in using the following tools BEFORE this course (1-lowest, 5-highest).
	4	Yes/No	Have you used e-thaksalawa or any other similar platform to obtain content for your teaching?
Intention to use technology after attending the programme	5	Likert scale	Rate your level of confidence in using following tools AFTER this course (1-lowest, 5-highest).
	6	Selection	Would you be willing to use Moodle (or any other LMS) in your school's teaching?
	7	Likert scale	Would you be using any of the tools that you learnt in this course in your teaching (rank them in the order of preference in using, 1 been the highest preference to use)
Open comments	8	Text	Do you have any other feedback you want to give?

3 Results

Several qualitative analyses were conducted with the use of the data collected at the end of the programme. The results consist of an analysis of the data collected from 35 respondents.

3.1 Participants' prior experiences in using technology for teaching

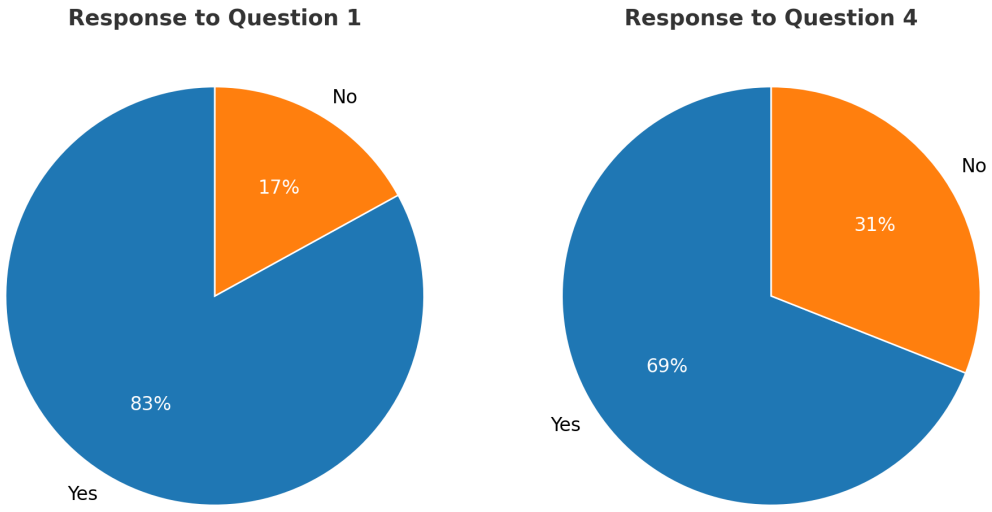

Fig. 1: Responses to Question 1 (Left) and Question 4 (Right)

In response to the Questions 1 and 4 (Table 2) the participants claimed their prior experience in using technology for teaching. 83% of the respondents had used some kind of technology in their teaching work while 69% indicated the use of e-thaksalawa [10], a large-scale MOOC platform developed by the Ministry of Education, Sri Lanka. However, this observation is not attributed to the participants' fluency in using technology for teaching as it did not suggest regular use in the classrooms.

3.2 Tools used by participants

Fig. 2: Responses to Question 2 (Tools used for teaching)

In response to Question 2 (Table 2) the participants indicated the tools they had used in teaching and assessments. Fig. 2 illustrates the word cloud generated out of the responses. The most frequent response was ChatGPT [11], a large language model (LLM) based conversational tool. It is observed that with the recent popularity of LLM-based tools like ChatGPT, teachers have shown interest in using such tools. There were mentions of Moodle [12] learning management system (LMS), Zoom [13] video conferencing platform and interactive activity creation platforms like Kahoot [14].

3.3 Level of confidence in using tools before and after the programme

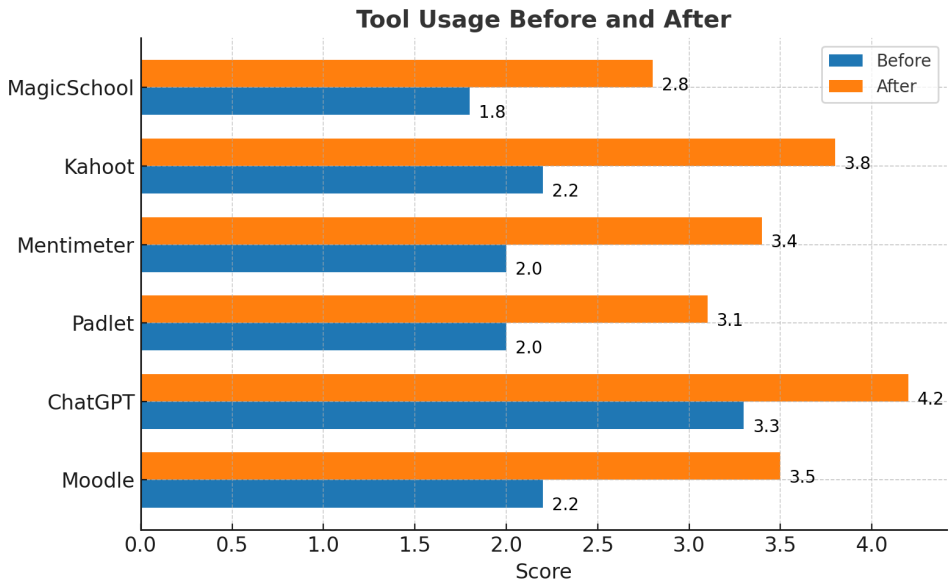

Fig. 3: Level of confidence in using tools for education before and after the programme (Questions 3 and 5)

Based on the responses to Questions 3 and 5 (Table 2), Fig. 3 compares the confidence level of the participants' in using the tools that were introduced during the programme. It was observed that the confidence level in using ChatGPT, Moodle, Kahoot, Padlet [15], Metimeter[16] and MagicSchool[17] significantly improved after the programme.

3.4 Willingness to use technology in teaching

3.4.1 Moodle or any other LMS

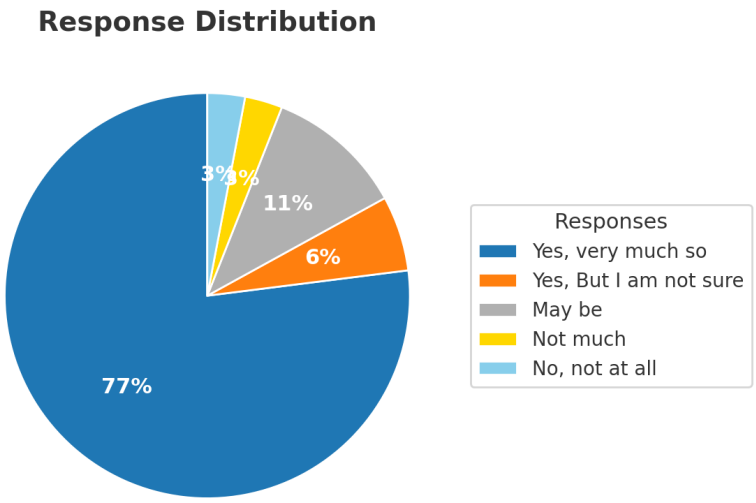

Fig. 4: Willingness to use Moodle or any other LMS in teaching

Fig. 4 illustrates the participants' willingness to use a LMS in teaching and assessments at schools. During the programme they were extensively guided in using the features provided by Moodle for content management, auto-graded assessments and communications. The programme has been effective in showcasing the importance of using a LMS.

3.4.2 Other tools, including LLMs

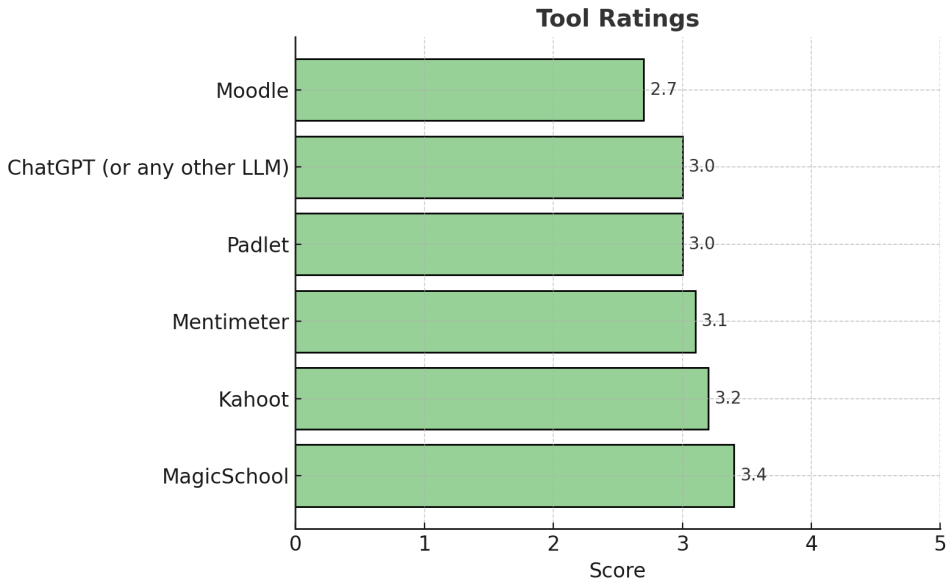

Fig. 5: Willingness to use tools (including LLMs) in teaching

Based on the observations of Fig.5, the participants have also indicated a high level of willingness to use diverse tools and frameworks in teaching. The programme has been effective in educating the teachers on the availability and the usage of tools.

3.5 General feedback

The participants generally had positive feedback towards the programme. The results indicate recognition of the importance of this programme for the enhancement of technology skills needed for modern-day teaching. Fig.6 provides a word cloud based on the responses to Question 8 (Table 2).

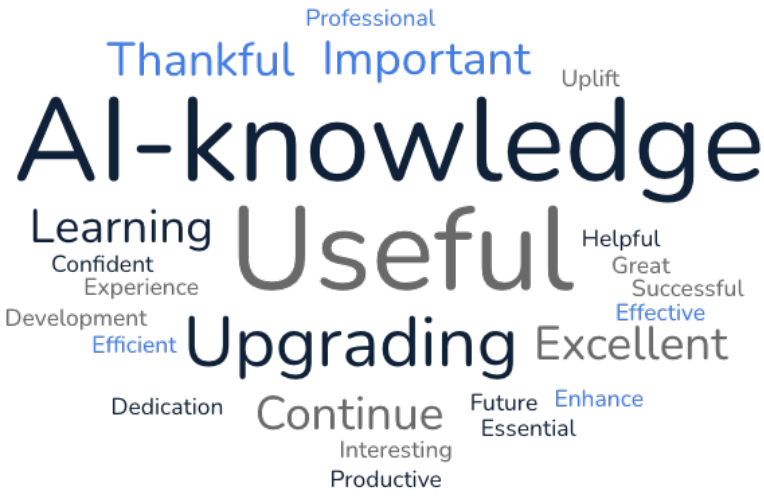

Fig. 6: General feedback from the participants (Question 8)

4 Conclusions

Based on the findings, the training programme for school teachers supported the following aspects.

- Creating awareness on the importance of using technology for teaching
- Upskilling the teachers with the digital tools and frameworks, including large language models for teaching, content creation and assessments
- Improving teachers' confidence in using technology for teaching and assessments

With the rapid developments in AI-based tools, it is becoming increasingly important for teachers to adapt. During this programme it was observed that the teachers are willing to use the available technology. It is becoming imperative for the teachers to be up-to-date with the emerging technology. Programmes of this nature will help create awareness on using technology for teaching in a positive and an effective manner.

The population in this study, coming from well-resourced schools, is not a fair representation of the situation of the whole country. It is identified that there will be barriers for teachers in using technology in general. It is suggested that a more diverse population of teachers should be involved in conducting similar future programmes.

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