The Impact of Computer Literacy on Pedagogy: A Case Study of English Teachers in Sri Lanka

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Abstract—**Recent years have seen a growing emphasis on the integration of digital competencies in education, particularly in the context of English language teaching. This study explores the role of computer literacy as a critical factor influencing pedagogical effectiveness among English teachers in Sri Lanka. Drawing on both theoretical and empirical perspectives, the study examines how digital proficiency shapes teaching methodology and its effectiveness. A mixed-method, case study design was employed in the research, involving 55 participants, with data collected through structured questionnaires and semi-structured interviews. Quantitative data were analyzed using SPSS, while qualitative data underwent thematic analysis. The findings revealed a significant correlation between teachers' computer literacy and their teaching performance, while qualitative insights highlighted persistent challenges such as limited access to resources, insufficient training, and institutional constraints. While the quantitative results confirmed the predictive value of digital skills, qualitative data suggested that contextual and infrastructural barriers often mediate their practical application. The study concludes by recommending targeted professional development and policy reforms to enhance digital integration in teaching.**

Keywords—computer literacy, digital competencies, teaching methodology

I. INTRODUCTION

In the 21st century, digital literacy has become a fundamental requirement for educators across the globe; particularly those teaching English as a second language (ESL). The integration of Information and Communication Technology (ICT) into education systems has transformed traditional teaching methodologies, placing new demands on teachers to be proficient in digital tools and platforms.

Numerous international studies have emphasized the importance of digital competence in ESL teaching. Son, Robb, and Charismiadji [1] highlighted the need for Indonesian English teachers to develop computer literacy to effectively use online learning platforms. Similarly, Dashtestani [2] found that Iranian EFL teachers faced significant challenges in integrating technology due to limited training and institutional support.

In Taiwan, Yu [3] observed that pre-service English teachers exhibited varying levels of computer literacy, with positive attitudes toward technology integration. This diversity in skill levels underscores the need for differentiated training programs. Cote and Milliner [4], studying Japanese university instructors, emphasized the necessity of continuous professional development to keep pace with evolving digital tools.In Sri Lanka, the government has made considerable efforts to embed ICT into the national curriculum, aiming to enhance both teaching quality and student learning outcomes [1], [2]. However, the success of these initiatives is largely dependent on the digital competencies of teachers, particularly in rural and semi-urban regions where access to resources and training may be limited [3].

In the South Asian context, studies from Pakistan [5], Nepal [6], and Sri Lanka [7] reveal similar challenges. Teachers often lack access to infrastructure, face limited training opportunities, and struggle with institutional barriers. In Sri Lanka specifically, the Department of Census and Statistics [8] reported that while general computer literacy among teachers has improved, disparities remain between urban and rural areas.

Therefore, this study focuses on the Godakawela Divisional Secretariat in the Sabaragamuwa Province of Sri Lanka, a region that exemplifies the challenges and opportunities of ICT integration in public education. English language teachers in government schools within this area play a critical role in shaping students' academic and communicative abilities. Yet, there is limited empirical evidence on the extent to which these educators possess and apply computer literacy skills in their instructional and educational practices. This gap in knowledge is particularly concerning given the increasing reliance on digital tools for language instruction and assessment [4], [5].

Despite national policies promoting ICT in education, many English teachers in government schools face barriers such as inadequate training, limited access to technology, and insufficient institutional support [6]. These challenges hinder their ability to effectively integrate digital tools into their teaching. Moreover, there is a lack of standardized metrics to assess teachers' computer literacy, making it difficult to

design targeted interventions. This study addresses these issues by evaluating the current level of computer literacy among English teachers in Godakawela and examining how these skills influence pedagogical effectiveness and student learning outcomes.

Research Questions

1. To what extent does computer literacy influence the teaching effectiveness of English language teachers in Sri Lanka?

2. What are the contextual and institutional barriers that affect the practical application of digital competencies in English language teaching?

3. To what extent can professional development and policy reforms enhance digital integration in English language classrooms?

II. MATERIALS AND METHODOLOGY

A. Methodology

This study adopts the Technology Acceptance Model (TAM), introduced by Fred Davis in 1989, as its theoretical foundation to examine the adoption of digital tools among English language teachers. TAM posits that two primary factors—perceived usefulness and perceived ease of use—determine an individual's intention to adopt and utilize technology. In the context of this research, these constructs are applied to understand how English teachers in government schools perceive the value and accessibility of computer literacy in enhancing their instructional practices. The model further incorporates external variables such as access to training, institutional support, and availability of technological resources, which influence users' attitudes and behavioral intentions. By integrating these elements, the study develops a conceptual framework that elucidates the factors shaping teachers' acceptance and application of digital tools in the classroom. This framework provides a structured lens through which to analyze the facilitators and barriers to technology integration in public education, particularly within the Godakawela Divisional Secretariat. The application of TAM thus enables a deeper understanding of how digital competencies are acquired and operationalized in educational settings.

The conceptual framework for this study is designed to examine the interrelationship between computer literacy skills and teaching performance among government school English teachers in the Godakawela Divisional Secretariat. The framework identifies computer literacy skills and educational background as key independent variables, while teaching performance serves as the dependent variable.

Computer literacy skills encompass teachers' proficiency in using digital tools, including hardware, software, and online platforms, to support instructional practices. Educational background refers to formal qualifications and training in computer-related disciplines, which are expected to influence the development of digital competencies. Teaching performance is defined by the effective integration of technology into classroom instruction, contributing to enhanced student engagement and learning outcomes.

By analyzing these variables and their interactions, the framework provides a structured basis for understanding how digital proficiency and academic preparation shape pedagogical effectiveness in technology-enhanced learning environments.

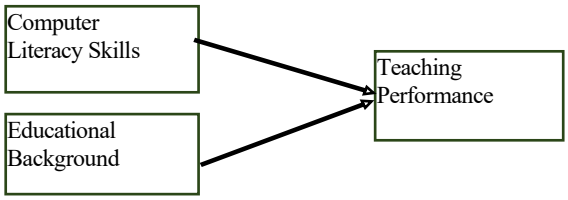


Fig. 1 conceptual framework

B. Hypotheses

H1-There is a relationship between computer literacy skills and teaching performance.

H0: There is no relationship between computer literacy skills and teaching performance.

H2-There is a relationship between educational background and teaching performance.

H0: There is no relationship between education background and teaching performance.

The methodology adopted for this study was designed to comprehensively address the research questions concerning the influence of computer literacy on teaching effectiveness, the barriers to digital integration in English language teaching, and the potential of professional development and policy reforms to enhance digital practices in Sri Lankan classrooms. A mixed-methods approach was employed, combining both quantitative and qualitative techniques to ensure a holistic understanding of the research problem.

Quantitative data were collected through a structured questionnaire distributed to 50 government school English teachers in the Godakawela Divisional Secretariat. This instrument was used to assess the current level of computer literacy, its correlation with teaching effectiveness, and perceptions of digital integration. To complement this, qualitative data were gathered through semi-structured interviews with five purposively selected teachers. These interviews provided deeper insights into the contextual and institutional challenges faced by educators, as well as their views on the effectiveness of existing training and policy frameworks.

The data collected were analyzed using both statistical and thematic techniques. Quantitative responses were processed using SPSS software, with descriptive statistics, correlation analysis, and regression models applied to explore relationships between variables. The

qualitative data were subjected to thematic analysis, allowing the researcher to identify recurring patterns and themes related to digital barriers, professional development needs, and policy implications.

Ethical considerations were carefully observed throughout the study. Participants were informed about the purpose of the research, assured of their anonymity and confidentiality, and given the freedom to withdraw at any stage. The study also acknowledged its limitations, including the restricted geographic scope, potential self-reporting bias, and the cross-sectional nature of the data, which limits causal inference. Nonetheless, the methodology provided a robust framework for exploring the digital competencies of English teachers and the systemic factors influencing their integration into classroom practice.

III. RESULTS AND DISCUSSION

A. Sample Collection

This study employed a stratified random sampling method to select 50 government school English teachers from the Godakawela Divisional Secretariat in Sri Lanka. Stratification was based on relevant factors such as school type and teaching experience to ensure proportional representation across key subgroups. This approach enhances the reliability of the findings by capturing the diversity within the target population. While the sample size was determined based on logistical feasibility and accessibility, it provides a meaningful snapshot of the region's educational context. However, due to the relatively small sample size and the localized scope of the study, caution should be exercised when generalizing the results to broader populations or different geographic regions. The sampling strategy was designed to balance representativeness with practical constraints, offering valuable insights while acknowledging the study's contextual limitations.

B. Sample Analysis

Table 1 Descriptive Statistics

Descriptive Statistics					
	N	Min	Max	Mean	Std. D.
Com. literacy skills	55	3	5	4.0364	0.32555
Edu. background	55	3	5	4.0675	0.39061
Teach. performance	55	3	5	4.1727	0.43029
Valid N (listwise)	55				

The dataset comprises responses from 55 government school English teachers, focusing on three key variables: computer literacy skills, educational background, and teaching performance. The analysis shows that computer literacy skills have a mean score of 4.03 (on a scale of 3 to 5) with a standard deviation of 0.325, indicating a generally high level of digital proficiency with moderate variability. Educational background also scored highly, with a mean of 4.06 and a standard deviation of 0.390, suggesting consistent academic qualifications related to computer literacy. Teaching performance recorded the highest mean at 4.17 with a standard deviation of 0.430, reflecting strong and consistent integration of technology into instructional practices across the sample. Overall, the data suggests that the teachers surveyed possess solid computer literacy and educational foundations, which are positively associated with effective teaching performance.

Table 2 Reliability Analysis

Variable	Items	Cronbach alpha	Status
Computer Literacy Skills	5	0.792	High
Educational background	5	0.888	Very High
Teaching Performance	5	0.861	Very High

The reliability analysis of the dataset indicates strong internal consistency across all measured variables. Computer literacy skills demonstrated a Cronbach's alpha of 0.792, reflecting high reliability. Educational background and teaching performance showed even higher reliability, with alpha values of 0.888 and 0.861 respectively. Since all values exceed the commonly accepted threshold of 0.6, the measurement scales used in the study are considered statistically reliable and free from significant bias, supporting the validity of the data collected.

Table 3 Validity Analysis

Items	KMO Coefficient	Bartlett's Test [Chi-Square]	Sig.	Status
Computer Literacy Skills	0.78	77.616	0	Good
Educational background	0.761	172.341	0	Good
Teaching Performance	0.657	178.667	0	Mediocre

The results of the validity analysis indicate that all variables in the study are suitable for factor analysis. The Kaiser-Meyer-Olkin (KMO) values for computer literacy skills (0.780), educational background (0.761), and teaching performance (0.657) all exceed the minimum threshold of 0.5, confirming sampling adequacy. Additionally, the significance level for Bartlett's Test of Sphericity was 0.000 for all variables, indicating that the correlations between items are sufficiently large for factor analysis. These results validate the inclusion of both independent and dependent variables in the model, supporting the robustness of the study's measurement framework.

Table 4 Correlational Analysis

Correlations

		Teaching performance	Computer literacy skills	Education background
Teaching performance	Pearson Correlation	1	.669	.677
	Sig. (2-tailed)		0	0
	N	55	55	55
Computer literacy skills	Pearson Correlation	.669	1	.732
	Sig. (2-tailed)	0		0
	N	55	55	55
education background	Pearson Correlation	.677	.732	1
	Sig. (2-tailed)	0	0	
	N	55	55	55

Correlation is significant at the 0.01 level (2-tailed).

The Pearson correlation between computer literacy skills and teaching performance is 0.669, which falls within the range of a strong positive relationship ($0.50 < r < 0.75$). This indicates a significant positive association between computer literacy skills and teaching performance. Therefore, Hypothesis 1 is accepted.

The Pearson correlation between education background and teaching performance is 0.677, which falls within the range of a strong positive relationship ($0.50 < r < 0.75$). This indicates a significant positive association between education background and teaching performance. Therefore, Hypothesis 2 is accepted.

Table 5 Multiple Regression Analysis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.723[a]	0.523	0.505	0.30287	2.152

a. Predictors: (Constant), education background, Computer literacy skills

b. Dependent Variable: Teaching performance

According to the table, the R square is 0.523, and the adjusted R Square is 0.505. Therefore, it can be concluded that 52% of the variation in teaching performance can be explained by computer literacy skills and educational background. Also, the R-value was 0.723 and it concluded that strong correlation between the independent variable and dependent variable, and it is in a strong level.

Finally the findings of this study reveals a significant relationship between English teachers' computer literacy and their pedagogical effectiveness within the Godakawela Divisional Secretariat. Quantitative analysis demonstrated that teachers with higher levels of digital proficiency exhibited stronger teaching performance, as evidenced by positive correlations and regression outcomes. These results affirm the hypothesis that computer literacy is a key determinant of instructional quality and other educational practices, particularly in the context of English language education where digital tools are increasingly integral to curriculum delivery and student engagement.

The qualitative responses from five English teachers offer valuable insights into their instructional approaches and strategies for addressing literacy development in English language classrooms. A consistent theme across all interviews is the emphasis on student-centered teaching, where reading and writing activities are integrated into lessons to foster authentic communication and engagement. Teachers reported using a variety of diagnostic tools, including formal assessments and informal observations, to evaluate students' literacy levels and tailor instruction accordingly.

Differentiated instruction emerged as a key strategy, with teachers employing flexible grouping, scaffolding, and targeted support to meet the diverse needs of learners. They also highlighted the use of explicit instruction, modeling, and guided practice, supported by authentic texts, multimedia resources, and culturally relevant materials to enhance language acquisition. A strong consensus was observed regarding the correlation between literacy proficiency and students' ability to comprehend complex English language concepts, reinforcing the importance of foundational literacy skills in second language learning.

Teachers acknowledged the challenges of teaching English as a second language, particularly in addressing literacy gaps, and emphasized the need for language-rich environments and structured support. They also identified effective resources such as leveled readers, digital platforms, and authentic materials as essential tools for improving literacy outcomes. These qualitative insights complement the quantitative findings, illustrating how digital competencies and pedagogical strategies intersect to support literacy development and student achievement in English language education.

However, the study also identified persistent barriers that mediate the practical application of computer literacy. These include limited access to technological infrastructure, insufficient training opportunities, and institutional constraints that hinder the effective integration of digital tools. Despite these challenges, teachers demonstrated a proactive attitude toward

professional development, often relying on peer collaboration and self-directed learning to enhance their digital skills.

Overall, the findings underscore the dual importance of individual teacher competencies and systemic support in advancing digital integration in education. The evidence suggests that while computer literacy significantly enhances teaching effectiveness, its impact is contingent upon contextual enablers such as access to resources and institutional backing. These insights highlight the need for targeted interventions, including structured training programs and policy reforms, to bridge existing gaps and promote sustainable digital transformation in Sri Lanka's public education system.

IV. CONCLUSION

This study underscores the pivotal role of computer literacy in enhancing pedagogical effectiveness among English language teachers in Sri Lanka. Through a mixed-methods approach, the research revealed a strong correlation between digital proficiency and teaching performance, while also highlighting the contextual and institutional barriers that hinder the practical application of these skills. The findings suggest that while individual competencies are essential, systemic support—such as access to infrastructure, targeted professional development, and policy-level interventions—is equally critical to realizing the full potential of digital integration in education. As Sri Lanka continues to advance its ICT agenda in the education sector, this study provides timely insights for stakeholders seeking to bridge the digital divide and foster a more inclusive, technology-enabled learning environment. Future research should expand the geographic scope and explore longitudinal impacts to further inform sustainable digital transformation in teaching practices.

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