Examining the Relationships Between UTAUT Constructs and Elementary ESL Teachers' Behavioural Intention to Integrate Technology in Malaysian Public Schools

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ABSTRACT

This study examines the relationships between performance expectancy, effort expectancy, social influence, and facilitating conditions, and elementary English as a Second Language (ESL) teachers' behavioural intention to integrate technology in instructional practices. In the context of increasing emphasis on digital education in Malaysia, understanding teachers' acceptance of technology is critical for effective implementation. Guided by the Unified Theory of Acceptance and Use of Technology (UTAUT), a quantitative descriptive correlational design was employed. Data were collected using a structured questionnaire from 162 elementary ESL teachers in public primary schools in the Kuala Terengganu district, Malaysia. The data were analysed using descriptive statistics, Pearson correlation analysis, and multiple linear regression. The Pearson correlation results indicated that all four UTAUT constructs were positively and significantly correlated with teachers' behavioural intention to use technology. Social influence demonstrated the strongest correlation, followed by performance expectancy, effort expectancy, and facilitating conditions. Regression analysis showed that the overall model was statistically significant and explained 44.1% of the variance in behavioural intention. Effort expectancy, social influence, and performance expectancy were significant positive predictors, whereas facilitating conditions did not demonstrate a statistically significant independent contribution. These findings support the relevance of the UTAUT framework in understanding technology-related behavioural intention among elementary ESL teachers in Malaysian public primary schools. The study highlights the importance of perceived usefulness, ease of use, and social and institutional support in shaping teachers' intention to integrate technology. The results provide empirical insights for policymakers and educators to strengthen technology integration initiatives, particularly through targeted professional development, improved infrastructure, and sustained institutional support to enhance digital teaching practices.

Keywords: UTAUT, technology integration, behavioural intention, ESL teachers, Malaysia

INTRODUCTION

The integration of technology into educational practices has become a central focus for researchers and policymakers globally. Rapid technological advancement and increasing digitalisation are associated with changes in teaching and learning processes, enabling more interactive learning environments, collaborative engagement, and expanded access to diverse educational resources (Hemawati, 2025; OECD, 2021; Parasar & Bhatt, 2025; UNESCO, 2023). Within language education, technology is recognised for its capacity to support instructional practices, facilitate language learning, and provide opportunities for learners to engage in meaningful communication within authentic contexts (Mosa, 2022; Pakirdinova Abdumutalijonovna & Mohinur Rasul kizi, 2025; Pongen, 2024)

In response to these developments, education systems worldwide have emphasised the integration of digital tools into classroom instruction. In Malaysia, national initiatives such as the Malaysia Education Blueprint 2013 to 2025 and the Digital Education Policy promote the use of technology to strengthen digital competencies and

enhance educational quality (Ministry of Education Malaysia, 2013, 2023). Despite these efforts, the effectiveness of technology integration is closely associated with teachers' behavioural intention to use technological tools in instructional practices (Mailizar et al., 2021; Scherer et al., 2019). Examining the factors associated with teachers' behavioural intention is therefore important for understanding patterns of technology adoption in educational contexts.

Background and rationale

The integration of technology in education has become an established component of contemporary teaching and learning practices globally. Ongoing technological advancement and increasing digitalisation have encouraged schools to adopt a range of educational technologies to support instructional delivery, enhance student engagement, and enable more flexible learning environments (OECD, 2023; UNESCO, 2023). In language education, technology facilitates interactive learning experiences, provides access to authentic language resources, and supports the development of communication skills through multimedia and online platforms (Godwin-Jones, 2021; Lai, 2019).

In Malaysia, efforts to promote technology integration in schools are reflected in national initiatives such as the Malaysia Education Blueprint 2013 to 2025 and the Digital Education Policy introduced by the Ministry of Education (Ministry of Education Malaysia, 2013, 2023). These initiatives emphasise the integration of digital tools into classroom practices to strengthen instructional quality and support students' readiness for participation in a digitalised context.

Within English as a Second Language education, technology integration is associated with expanded opportunities to support language learning. Digital tools provide access to authentic materials, interactive activities, and communication platforms that enable meaningful language use (Pakirdinova Abdumutalijonovna & Mohinur Rasul kizi, 2025; Pongen, 2024). However, variation in the extent of technology integration across classrooms remains evident, with adoption associated with a range of psychological, pedagogical, and institutional factors (Scherer et al., 2020; Sulindra et al., 2024). Teachers' behavioural intention to use technology has been identified as a key determinant of actual technology use within the Unified Theory of Acceptance and Use of Technology framework (Venkatesh et al., 2003). Examining the factors associated with teachers' behavioural intention is therefore important for understanding patterns of technology adoption in educational settings.

Technology integration in Malaysian public primary ESL classrooms

Technology integration in Malaysian schools has received increasing attention as part of broader efforts to modernise teaching and learning practices. The Ministry of Education Malaysia has emphasised digital learning through national initiatives aimed at strengthening the role of technology in education (Ministry of Education Malaysia, 2023). These initiatives encourage teachers to incorporate digital tools, multimedia resources, and online learning platforms into classroom instruction.

Within English as a Second Language education, technology is associated with opportunities to support language learning through interactive and authentic experiences. Digital tools such as multimedia applications, language learning platforms, and online collaboration environments provide access to authentic materials and facilitate meaningful language use (Godwin-Jones, 2021; Lai, 2019).

Despite the increasing availability of educational technologies, variation in the extent of classroom integration remains evident. The adoption of technology in instructional practices is associated with teachers' readiness and willingness to use digital tools (Scherer et al., 2020; Sulindra et al., 2024). Teachers may encounter challenges such as limited technological self-efficacy, insufficient professional training, and institutional constraints, which are associated with their engagement in technology integration (OECD, 2023; UNESCO, 2023). Understanding the factors associated with teachers' behavioural intention to use technology is therefore important for supporting more effective technology integration in ESL classrooms.

Theoretical underpinning: UTAUT

The integration of technology in educational settings has been examined through various theoretical frameworks that explain individuals' acceptance and use of technological innovations. One of the most widely applied models for understanding technology adoption is the Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh et al. (2003). The UTAUT model synthesises elements from earlier technology acceptance theories and proposes that individuals' behavioural intention to use technology is associated with four key constructs: performance expectancy, effort expectancy, social influence, and facilitating conditions.

Performance expectancy refers to the degree to which individuals believe that using a particular technology is associated with improvements in job performance. In educational contexts, teachers are more likely to adopt technological tools when they perceive that such tools support instructional effectiveness, classroom management, and students' learning processes. Positive perceptions of technology in relation to teaching performance are therefore associated with stronger behavioural intention to use technology (Venkatesh et al., 2003; Scherer et al., 2021).

Effort expectancy represents the degree of ease associated with the use of technology. Technologies that are perceived as user-friendly and manageable within classroom practices are more likely to be adopted. When teachers perceive technological tools as requiring minimal effort to learn and operate, higher levels of behavioural intention are typically observed, as perceived ease of use or effort expectancy has been consistently found to significantly influence technology adoption [1], [2].

Social influence refers to the extent to which individuals perceive that significant others expect them to use a particular technology. Within school environments, social influence may stem from school leadership, colleagues, and institutional expectations related to digital integration. Supportive professional environments and positive normative beliefs regarding technology use are associated with stronger behavioural intention among teachers [2], [3].

Facilitating conditions describe the degree to which individuals perceive that organisational and technical infrastructures are available to support technology use. In educational settings, these conditions include access to digital devices, internet connectivity, technical assistance, and professional development opportunities. Adequate facilitating conditions are associated with greater readiness to engage in technology integration [4], [5].

According to the UTAUT framework, these constructs are associated with individuals' behavioural intention, which reflects their readiness to perform a particular behaviour. In this study, behavioural intention refers to elementary ESL teachers' intention to integrate technology into their instructional practices. Examining the relationships between these constructs and behavioural intention provides a theoretical basis for understanding patterns of technology adoption in educational contexts.

Research gap and problem statement

Despite the expanding body of research on technology adoption in education, several gaps remain. A substantial proportion of existing studies has focused on higher education settings or general teaching populations, with comparatively limited attention given to elementary-level ESL teachers in public school contexts [6], [7]. This indicates a need for more context-specific investigations that address the unique characteristics of primary education environments.

Within the Malaysian context, prior research has largely examined general perceptions of digital learning and barriers to technology integration, with relatively limited empirical emphasis on the psychological and institutional factors associated with teachers' behavioural intention to use technology. Existing local studies have highlighted variability in teachers' technology integration practices and readiness across school contexts, particularly in relation to digital competence and institutional support [8], [9]. While national policies promote digital integration in schools (Ministry of Education Malaysia, 2023), variation in classroom implementation remains evident, suggesting that teachers' behavioural intention may differ across contexts.

Furthermore, although the Unified Theory of Acceptance and Use of Technology model has been widely applied to examine technology adoption, its application within specific contexts such as Malaysian public primary ESL education remains underrepresented. Contextual factors, including institutional support, access to infrastructure, and school-level expectations, may be associated with how performance expectancy, effort expectancy, social influence, and facilitating conditions relate to teachers' behavioural intention [2], [3].

Therefore, there is a need to examine the relationships between performance expectancy, effort expectancy, social influence, facilitating conditions, and elementary ESL teachers' behavioural intention to use technology within the Malaysian public school system. Addressing this gap may contribute to a more contextually grounded understanding of technology adoption and provide insights relevant to policymakers and educators seeking to strengthen technology integration practices.

Research objectives and research questions

Based on the research gap identified, this study aims to examine the relationships between performance expectancy, effort expectancy, social influence, facilitating conditions, and elementary ESL teachers' behavioural intention to integrate technology in public schools in Terengganu, guided by the Unified Theory of Acceptance and Use of Technology (UTAUT).

Specifically, this study examines the extent to which performance expectancy, effort expectancy, social influence, and facilitating conditions are associated with teachers' behavioural intention to use technology in instructional practices.

Accordingly, the study is guided by the following research questions:

RQ1: What are the relationships between performance expectancy, effort expectancy, social influence, facilitating conditions, and elementary ESL teachers' behavioural intention to use technology?

RQ2: To what extent are performance expectancy, effort expectancy, social influence, and facilitating conditions associated with teachers' behavioural intention to use technology in instructional practices?

Significance of the Study

This study contributes to the existing body of knowledge by examining the factors associated with elementary ESL teachers' behavioural intention to integrate technology in instructional practices. By focusing on performance expectancy, effort expectancy, social influence, and facilitating conditions within the Unified Theory of Acceptance and Use of Technology (UTAUT) framework, the study provides a context-specific understanding of technology adoption in Malaysian public primary schools. In doing so, it extends prior research, which has predominantly focused on secondary, pre-service, or higher education contexts, by offering insights from the perspective of elementary ESL teachers.

From a theoretical perspective, this study contributes to the application of the UTAUT model in a primary education and ESL context. It provides empirical evidence on the relationships between UTAUT constructs and behavioural intention, thereby supporting the continued use of the model in examining technology adoption within specific educational settings. The findings may also serve as a reference for future researchers who intend to apply UTAUT in similar contexts or extend it to other subject areas and educational levels.

From a practical perspective, this study offers insights into the factors associated with teachers' engagement in technology integration. Understanding these factors may assist educators, school leaders, and professional development providers in identifying areas that require support, such as technological competencies, resource availability, and institutional encouragement. The findings may inform the design of targeted professional development programmes and support systems that align with teachers' needs in integrating technology into ESL instruction.

From a policy perspective, this study provides contextually relevant evidence that may inform decision-making at the institutional and system levels. The findings may support stakeholders, including the Ministry of Education and district education offices, in evaluating existing technology-related initiatives and identifying areas for improvement in terms of infrastructure, resource allocation, and training support. In particular, the study offers insights relevant to the Kuala Terengganu district, which may assist local education authorities in strengthening technology integration strategies within primary schools.

In addition, this study may serve as a reference for future research by providing empirical data and a structured framework for examining technology adoption in educational contexts. The findings may support further investigations across different regions, subject areas, and educational levels, contributing to a broader understanding of technology use in teaching and learning.

METHODOLOGY

This section outlines the methodological procedures employed in this study, including the research design, participants and sampling, instrumentation, data collection procedures, and data analysis techniques. The methodological approach is aligned with the objective of examining the relationships between performance expectancy, effort expectancy, social influence, facilitating conditions, and elementary ESL teachers' behavioural intention to integrate technology within the Unified Theory of Acceptance and Use of Technology (UTAUT) framework. A quantitative research design was employed to enable statistical examination of the relationships among the variables and to support objective and context-specific generalisation of the findings.

Research Design

This study employed a quantitative research design to examine the relationships between performance expectancy, effort expectancy, social influence, facilitating conditions, and elementary ESL teachers' behavioural intention to integrate technology in instructional practices. The study adopts a descriptive correlational design, examining relationships among variables without manipulation. A cross-sectional survey approach was adopted to collect data from teachers working in public primary schools in Terengganu.

Quantitative approaches are widely used in technology acceptance research as they enable the statistical examination of relationships among variables and the evaluation of theoretical models using empirical data. In this study, the Unified Theory of Acceptance and Use of Technology (UTAUT) framework was applied to examine the relationships between performance expectancy, effort expectancy, social influence, facilitating conditions, and teachers' behavioural intention to use technology.

The data collected were analysed using descriptive statistics, Pearson correlation analysis, and multiple linear regression. Descriptive statistics were used to summarise the characteristics of the variables, while Pearson correlation analysis was conducted to examine the relationships among the constructs. Multiple linear regression analysis was performed to examine the extent to which performance expectancy, effort expectancy, social influence, and facilitating conditions are associated with teachers' behavioural intention to use technology in instructional practices.

Participants and Sampling

The participants in this study consisted of elementary ESL teachers from public primary schools in the Kuala Terengganu district, Malaysia. The target population comprised approximately 280 English language teachers teaching at the primary school level within the district.

A total of 162 teachers participated in the study. The sample was selected using a purposive sampling technique, as participants were required to meet specific inclusion criteria, namely currently teaching English as a Second Language at the primary school level in public schools. Purposive sampling was considered appropriate as the study required participants with specific characteristics relevant to the research context. This approach ensured that the data collected were relevant to the objectives of the study and aligned with the focus on ESL teachers' technology integration practices. The sample included teachers with varying levels of teaching experience,

professional backgrounds, and familiarity with educational technology. This variation supports a broader representation of perspectives related to teachers' behavioural intention to use technology in instructional practices within the public-school context. This represents a response rate of approximately 57.9%.

Instrumentation

Data for this study were collected using a structured questionnaire grounded in the Unified Theory of Acceptance and Use of Technology (UTAUT). The instrument was designed to measure elementary ESL teachers' perceptions of technology use and their behavioural intention to integrate technology into instructional practices. The measurement items were adapted from Venkatesh et al. (2003) and subsequent UTAUT-based studies.

The questionnaire consisted of 52 items organised into three sections. Section A collected participants' demographic information. Section B gathered information on teachers' technology usage practices, including duration, frequency, and intensity of technology use in instructional activities, using predefined categorical response options.

Section C comprised items measuring the UTAUT constructs, namely performance expectancy, effort expectancy, social influence, facilitating conditions, and behavioural intention. All items were assessed using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The items were adapted from established UTAUT-based instruments to ensure content validity and contextual relevance. Minor modifications were made to align the items with the context of elementary ESL teaching in Malaysian public schools.

Additional constructs included in the original instrument, such as attitude, self-efficacy, and anxiety, were not included in the present analysis, as they were beyond the scope of this study. A pilot study was conducted to assess the clarity and preliminary reliability of the instrument prior to the main data collection.

Reliability

The reliability of the instrument was assessed using Cronbach's alpha to evaluate the internal consistency of the constructs. A pilot study was conducted prior to the main data collection, and the data were analysed using IBM SPSS Statistics version 29.

The results indicated that the overall reliability of the instrument was high, with a Cronbach's alpha value of 0.891, demonstrating strong internal consistency. The reliability values for the individual constructs varied. Social influence showed excellent reliability ($\alpha = 0.925$), while performance expectancy ($\alpha = 0.800$) and behavioural intention ($\alpha = 0.772$) demonstrated acceptable levels of internal consistency.

Effort expectancy ($\alpha = 0.598$) and facilitating conditions ($\alpha = 0.544$) recorded comparatively lower reliability values. These values may be associated with the inclusion of reverse-coded items, which can affect internal consistency when items are interpreted inconsistently by respondents. While the values fall below commonly recommended thresholds, the constructs were retained due to their theoretical significance within the UTAUT framework and their relevance to the research objectives.

Overall, the results indicate that the instrument demonstrates adequate internal consistency for examining the constructs in this study.

Data Collection Procedure

Ethical approval for the study was obtained from the Ministry of Education Malaysia (MOE) through the Educational Research Application System (ERAS). The research proposal and instruments were reviewed prior to approval, and formal permission to conduct the study was granted by the Educational Planning and Research Division, MOE. The approval was valid from 9 October 2024 to 13 February 2025, subject to compliance with the stipulated conditions.

Data were collected using an online questionnaire distributed via Google Forms. The survey link was disseminated to elementary ESL teachers in public primary schools in the Kuala Terengganu district through official school communication channels and professional networks. Additionally, the distribution was formally endorsed by the Kuala Terengganu District Education Office (PPD), which facilitated access to the targeted sample and encouraged participation.

Data collection was conducted over approximately six weeks, from 6 October 2024 to 16 November 2024. Participation was voluntary, and respondents were informed of the study purpose prior to completing the questionnaire. All responses were collected anonymously to ensure confidentiality and to promote honest and unbiased responses. The study adhered to all conditions stipulated by the MOE, including obtaining permission from relevant authorities and ensuring that data collection did not disrupt teaching and learning activities.

Data Analysis

The data were analysed using IBM SPSS Statistics version 29. Descriptive statistics were used to summarise respondents' characteristics and to provide an overview of the study variables.

Pearson correlation analysis was conducted to examine the relationships between performance expectancy, effort expectancy, social influence, facilitating conditions, and behavioural intention.

Multiple linear regression analysis was performed to determine the extent to which performance expectancy, effort expectancy, social influence, and facilitating conditions predict elementary ESL teachers' behavioural intention to use technology.

Prior to regression analysis, key assumptions were assessed. Normality was examined using skewness and kurtosis values, which were within acceptable ranges. Multicollinearity was evaluated using tolerance and Variance Inflation Factor (VIF), with all tolerance values exceeding 0.10 and VIF values below 10, indicating no multicollinearity concerns.

RESULTS AND DISCUSSION

This section presents the findings on the relationships between performance expectancy, effort expectancy, social influence, facilitating conditions, and elementary ESL teachers' behavioural intention to use technology. The results are interpreted in relation to the study objective and the UTAUT framework.

Correlation Analysis

Pearson correlation analysis was conducted to examine the relationships between the independent variables and behavioural intention. The results indicate that all four constructs—effort expectancy, social influence, performance expectancy, and facilitating conditions—are positively and significantly correlated with behavioural intention.

Social influence demonstrated the strongest correlation with behavioural intention ($r = 0.547$, $p < 0.001$), followed by performance expectancy ($r = 0.528$, $p < 0.001$) and effort expectancy ($r = 0.515$, $p < 0.001$). Facilitating conditions showed a significant positive correlation with behavioural intention ($r = .340$, $p < .001$).

These findings indicate that higher levels of social influence, performance expectancy, effort expectancy, and facilitating conditions are associated with stronger behavioural intention to use technology. The prominence of social influence aligns with the UTAUT framework, which emphasises the role of social factors in shaping technology adoption (Venkatesh et al., 2003). This result is also consistent with prior studies highlighting the importance of social influence in educational technology adoption (Scherer et al., 2021; Teo et al., 2019).

Multiple Linear Regression Analysis

Multiple linear regression analysis was conducted to examine the extent to which performance expectancy, effort expectancy, social influence, and facilitating conditions predict elementary ESL teachers' behavioural intention to use technology.

The overall regression model was statistically significant, $F(4, 157) = 30.980$, $p < .001$. The model explained 44.1% of the variance in behavioural intention ($R^2 = .441$), indicating moderate explanatory power.

Three predictors made statistically significant positive contributions to behavioural intention. Effort expectancy demonstrated the largest standardized contribution (B = .442, β = .302, t = 3.959, p < .001), followed closely by social influence (B = .311, β = .298, t = 4.055, p < .001) and performance expectancy (B = .309, β = .256, t = 3.500, p < .001). Facilitating conditions did not make a statistically significant independent contribution (B = -.052, β = -.037, t = -.498, p = .619).

These findings indicate that effort expectancy, social influence, and performance expectancy are significant predictors of behavioural intention, whereas facilitating conditions are not a statistically significant independent predictor. The prominence of effort expectancy suggests that perceived ease of use plays an important role in shaping teachers' intention to integrate technology, consistent with the UTAUT framework (Venkatesh et al., 2003).

The significant role of social influence highlights the importance of institutional and peer-related factors, which aligns with prior research on technology adoption in educational contexts [2], [3].

Although facilitating conditions were positively and significantly correlated with behavioural intention, they did not make a statistically significant independent contribution when effort expectancy, social influence, and performance expectancy were controlled. This pattern may reflect variance shared with the other UTAUT constructs. Facilitating conditions therefore should not be interpreted as an independent predictor of behavioural intention in this sample.

Overall, the findings support the applicability of the UTAUT framework in explaining teachers' behavioural intention to use technology in instructional practices within Malaysian public primary schools.

Table 1: Multiple Linear Regression Results

Variable	B	Std. Error	β	t	p
Constant	.031	.352	-	.087	.931
Effort Expectancy	.442	.112	.302	3.959	< .001
Performance Expectancy	.309	.088	.256	3.500	< .001
Social Influence	.311	.077	.298	4.055	< .001
Facilitating Conditions	-.052	.104	-.037	-.498	.619

Note. $R = .664$; $R^2 = .441$; adjusted $R^2 = .427$; $F(4, 157) = 30.980$, $p < .001$.

CONCLUSION

This study examined the factors influencing elementary ESL teachers' behavioural intention to use technology in instructional practices using the UTAUT framework. The findings showed that performance expectancy, effort expectancy, social influence, and facilitating conditions were all significantly related to behavioural intention. Regression analysis indicated that effort expectancy, social influence, and performance expectancy significantly predicted behavioural intention, whereas facilitating conditions did not make a statistically significant independent contribution. Based on the standardized coefficients, effort expectancy demonstrated the strongest contribution, followed closely by social influence and performance expectancy.

These findings support the applicability of the UTAUT framework in explaining technology-related behavioural intention among elementary ESL teachers in Malaysian public primary schools. The study contributes empirical evidence from a primary ESL context, which has received comparatively less attention in the literature. The results indicate that behavioural intention is associated not only with the availability of support and resources, but also with teachers' perceptions of the usefulness and ease of use of technology in instructional practice.

From a practical perspective, the findings suggest that efforts to strengthen technology integration should focus on enhancing teachers' perceptions of the instructional value of technology, improving ease of use, and fostering supportive school environments. School leaders and policymakers should continue to strengthen institutional support, professional development opportunities, and access to relevant resources to facilitate effective technology integration in ESL classrooms.

This study has several limitations. First, the cross-sectional design limits the ability to examine changes over time. Second, the findings are based on self-reported data, which may be subject to response bias. Third, the study focuses on public primary schools within a single district, which may limit generalisability to other contexts.

Future research may extend this work by including teachers from different regions or educational levels, employing longitudinal designs, or incorporating qualitative approaches to gain deeper insights into teachers' experiences with technology integration. Such approaches may provide a more comprehensive understanding of factors shaping technology use in language education.

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