



Investigating future trends in teaching and learning within Educational Leadership and Management in English language education at Pahang Community Colleges

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ABSTRACT

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This descriptive quantitative study examines future trends in English language teaching and learning at Pahang Community Colleges from the perspective of Educational Leadership and Management (ELM). Using Kouzes and Posner's transformational leadership model and constructivist learning theory, this study investigates the impact of leadership, teaching methods, and technology use working together to support effective English language teaching in this setting. A stratified random sampling was employed, focusing on 358 students enrolled in English courses at Community Colleges in Pahang state, Malaysia, as learners of technology integration. Data were collected using questionnaires and analyzed using descriptive and inferential statistics, including means, correlations, and multiple regression. Findings illuminate the leadership attributes and practices that support meaningful, technology-enhanced, constructivist English teaching and discern emerging trends in digital tools and pedagogical approaches. The findings indicate that PowerPoint continues to dominate as the primary tool for language education presentations. The results indicate that the correlation between fundamental attributes of educational leadership (ELI), technological advancements in English language education (TAI), and the current practice (CPI) is high and significant. Findings from regression reveal that both ELI and CPI are strong indicators of future planning and adaptability (FD). Nevertheless, the study contributes to the limited literature on transformational leadership for technology integration in English language education in community colleges. It provides evidence-based insights and pragmatic recommendations for educational leaders, English lecturers, and policymakers seeking to close the pedagogical technology gap and to design strategic, future-oriented English language programs at Pahang Community Colleges.

Contribution/Originality: This study contributes to English language teaching in community colleges in Pahang, Malaysia. The findings suggest that the academic community at Pahang community colleges is primed for transformative leadership, indicating a latent readiness to embrace initiatives that improve the quality of teaching and learning.

1. INTRODUCTION

The global educational landscape is experiencing a significant upheaval, propelled by digitalization, rapid globalization, and the socio-economic demands of the Fourth Industrial Revolution (IR 4.0) (Geok, 2024). In this context, English language education has progressed from a conventional academic subject into an essential skill for meaningful global participation, underpinning international communication, knowledge exchange, and access to global opportunities. This transition is especially prominent in emerging economies such as Malaysia, where English proficiency serves as a key facilitator of international trade, diplomatic engagement, scholarly collaboration, and intercultural contact, thereby impacting both national competitiveness and individuals' socio-economic mobility (Atasheva, 2024).

As for the Technical and Vocational Education and Training (TVET) sector in Malaysia, a sector recognized as a foundation for the development of national human capital within the Twelfth Malaysia Plan, 2021-2025 (Ministry of Education, Malaysia), language competency is acknowledged as a strategic element essential for the Economic Planning Unit. As Malaysia progresses in its economic transformation program, TVET graduates are anticipated to have robust technical skills while also conveying information effectively in English to navigate global supply chains, interpret complex international requirements, and engage in collaboration across culturally diverse teams (Kamaruzaman, Majid, Yau, & Sharil, 2024). Consequently, English education at institutions such as Pahang Community Colleges must go beyond fundamental literacy and become a functional, workplace-oriented linguistic framework that immediately enhances industry relevance, graduate employability, and readiness for the Fourth Industrial Revolution (IR 4) labour markets (Bekmurzaeva & Kovalev, 2023).

English Language Teaching (ELT) is experiencing a significant transformation, propelled by the integration of digital learning and the evolving demands of the global workforce (Geok, 2024; Roozafzai, 2025). Teaching English as a second language poses a serious challenge for institutions (Chen, Nair, & Wider, 2022). The Pahang Community Colleges face the distinct issue of reconciling technical proficiency with the linguistic skills required by IR 4.0. The implementation of digital tools, including artificial intelligence (AI) and interactive platforms such as Canva and YouTube, is increasingly seen as essential for the development of vocational students. According to Fitria (2022) and Rosli and Abdullah (2022), effective integration demands more than mere tool implementation; it necessitates a fundamental pedagogical transformation to cultivate creativity and engagement (Sokolova, 2025).

However, the capacity of Pahang Community Colleges to implement this necessary transition is hampered by significant systemic challenges. Entrenched practices, resource limitations, and leadership frameworks that are not yet aligned with Education 4.0 principles constrain pedagogical innovation, hindering the proper integration of technology and English-language teaching.

1.1. Problem Statement

A significant difficulty arises from the widespread dependence on conventional, teacher-centered paradigms inside these institutions. Despite the acknowledged strategic importance of English proficiency for Technical and Vocational Education and Training (TVET) graduates, pedagogical approaches often remain predominantly lecture-based, failing to accommodate diverse learning styles, varying skill levels, and widespread apprehensions or negative perceptions of English among TVET students (Kamaruzaman et al., 2024; Zhang & Policarpio, 2025). Furthermore, this conventional model is inherently incompatible with the future workforce's requirements for adaptability, problem-solving, and collaborative communication skills, which are best cultivated through interactive, student-centered methods.

Compounding this pedagogical inertia is a persistent "digital divide" among educators. Numerous lecturers exhibit an aversion to embracing technological advancements, a reluctance frequently rooted in feeling overwhelmed by the rapid evolution of ELT methodologies and interactive platforms (Schmitz et al., 2023). This is evidenced by a predominant reliance on conventional tools like PowerPoint, in sharp contrast to the inconsistent integration of more

dynamic alternative platforms such as Canva and YouTube (Fitria, 2022; Rosli & Abdullah, 2022). This separation is exacerbated by inadequate pedagogical preparation in technology integration, infrastructural constraints, and the absence of a clear strategic vision for aligning specific digital tools with language-learning objectives (Wang, 2025).

The most fundamental factor of this problem is the gap in Educational Leadership and Management (ELM). Leadership within this context often emphasizes administrative efficiency and compliance over instructional leadership, which involves proactively shaping a teaching culture, championing innovation, and developing educators' competencies (Banu, 2023). Consequently, contemporary ELM practices often fail to empower teachers to adapt to the rapid evolution of ELT methodologies, leaving them feeling overwhelmed by change rather than encouraged by it. Without a proactive shift towards transformational leadership, students risk being linguistically unprepared for global industry standards (Sharma, Kaur, & Mittal, 2026).

This leadership gap is especially significant given the current need to integrate digital tools such as Artificial Intelligence (AI). However, while existing literature has separately explored leadership in ELT and the growing influence of AI in language education, these two domains remain largely unconnected. Research on AI in ELT predominantly focuses on teaching practices, learning outcomes, and the technology gap. It receives minimal consideration from the institutional leadership and management perspectives necessary for its effective integration.

A significant contextual gap exists in the literature, as many studies on AI in ELT are confined to global or national frameworks, neglecting the specific cultural, social, and economic circumstances of local institutions such as Pahang Community Colleges. This has led to the improper generalization of leadership approaches for AI integration from other regions, despite clear evidence that distinct contexts require tailored leadership strategies. The rapid breakthrough in AI is transforming ELT methodologies; there is a deficiency of empirical research examining how educational leaders strategically plan, manage, and adapt to changes within community college environments. Consequently, a significant mismatch persists between emerging technological trends and institutional practice, marked by a lack of studies evaluating leadership readiness, decision-making, and implementation of policies for the deployment of AI.

Therefore, this study addresses a critical research gap by examining AI-related leadership and management practices in English language education within the specific context of Pahang Community Colleges. By focusing on local needs, emerging AI-driven pedagogical trends, and institutional leadership responses, this research contributes context-specific insights that support sustainable, ethical, and practical integration of AI in ELT, ensuring the continued relevance and competitiveness of Pahang Community Colleges.

The domain of English Language Teaching (ELT) is marked by rapid methodological and technological evolution, driven by the emergence of new and enhanced approaches (Wang, 2025). Consequently, research on Pahang Community Colleges presents a critical opportunity to evaluate the efficacy of recent innovations and offers insightful perspectives for further enhancement. Such research could yield transformative potential by providing valuable perspectives to strengthen leadership and management in English language education. This, in turn, will ensure its sustained efficacy and relevance in the future (Abdullah et al., 2021).

In an era marked by the growing significance of English as the global lingua franca of communication and the exponential growth of online learning platforms, this study critically examines the role of effective leadership in navigating these transformative shifts. By offering a comprehensive analysis of emerging trends in English language education, such as adaptive pedagogies, digital-tool integration, and learner-centered methodologies, the research aims to empower leaders at Pahang Community Colleges with pragmatic insights. This strategic alignment of leadership and management practices is crucial for enhancing institutional competitiveness, fostering long-term relevance, and meeting the evolving demands of a digital-first educational landscape.

Building on this foundation, the study addresses a significant research gap by examining the context-specific leadership and management practices in English language education across Pahang Community Colleges. Unlike broader or generalized studies, this analysis is deliberately tailored to the unique socio-economic, cultural, and

operational needs of these institutions and the communities they serve. It rigorously evaluates how contemporary developments, including cutting-edge pedagogical innovations, the seamless integration of educational technologies (e.g., AI-driven platforms and virtual reality simulations), and enduring challenges such as resource constraints, teacher professional development, and equitable access to online tools, impact institutional adaptation and efficacy.

1.2. Research Questions

This study is directed by the following research questions.

1. What are the technological tools used in English language education at Pahang Community Colleges?
2. What is the mean level for Future planning and adaptability (FD), Fundamental attributes of educational leadership (ELI), Technological advancements in English language education (TAI), and Current practice (CPI)?
3. Is there a correlation between fundamental attributes of educational leadership (ELI), technological advancements in English language education (TAI), and current practice (CPI)?
4. What are the impacts of Fundamental attributes of educational leadership (ELI), Technological advancements in English language education (TAI), and Current practice (CPI) on Future planning and adaptability (FD)?

2. LITERATURE REVIEW

Moraes et al. (2023) assert that Education 4.0 emphasizes personalized learning experiences and the adoption of unconventional pedagogical approaches, with a strong focus on enhancing digital literacy. Abdullah et al. (2021) argue that reform in English language education within Malaysian TVET institutions is an ongoing process that requires teaching strategies to be continuously aligned with the changing demands of industry. They further emphasize that transformational leadership is essential in enabling such change by cultivating a shared vision. From an educational management perspective, this highlights the obligation of institutional leaders to act as catalysts for change by promoting technological integration, moving beyond conventional administrative functions to serve as instructional visionaries who actively guide and facilitate innovation (Lin & Yu, 2023).

Transformational leadership theory conceptualizes leadership as a dynamic process in which leaders and followers work together to elevate motivation, dedication, and innovation. Schmitz et al. (2023) emphasize that effective leadership is driven by a distinct sense of purpose, in which managerial decisions are strategically aligned with enhancing student learning outcomes.

The constructivist theory perceives learning as an active process wherein individuals construct knowledge through experience instead of passively absorbing information (Chand, 2023; Shen & Tsai, 2023). Within the realm of English Language Teaching (ELT), this perspective advocates student-centered approaches that promote the use of language in authentic social interactions and underscores the importance of reflective practice in teacher education, enabling educators to respond effectively to the diverse needs of vocational students, particularly those requiring English for specific purposes.

Educational Leadership and Management (ELM) entails the strategic coordination of institutional resources to achieve academic excellence. The role of ELM in English education is multifaceted, encompassing curriculum management, staff professional development, and the cultivation of a pro-technology ethos. The integration of technology into ELT is not an option. Thus, the curriculum must now ensure the use of technology to enhance learning efficiency. An important element of this transition is the establishment of a strong institutional framework for digital delivery. Liu, Wu, Li, Guo, and Ye (2024) argue that successful e-learning depends not merely on the availability of technological infrastructure, but also on a comprehensive pedagogical framework that prioritizes “humanware,” particularly the readiness and professional development of lecturers. Therefore, e-learning must be

intentionally crafted for the digital milieu, with interactive and engaging content that supports effective student learning.

Interactive platforms such as Canva and YouTube have become indispensable in the modern classroom. Fitria (2022) notes that Canva is a vital tool for developing visual literacy and creativity in English learners. Thus, these tools enable students to create technical presentations and instructional videos that are highly relevant to their vocational fields. Furthermore, Mayer's Multimedia Learning theory (Mayer, 2024) elucidates why tools like Canva and YouTube are practical. This theory suggests that people learn more effectively with words and visual stimuli rather than through verbal stimuli alone. In vocational English, where technical terms can be abstract, visual interactive media reduce cognitive load for students' learning (Fitria, 2022).

Besides, intelligent tutoring systems and chatbots (Sokolova, 2025) offer opportunities for low-anxiety conversational practice. More importantly, learning analytics embedded in these platforms can provide unique insights into student learning patterns, providing just-in-time intervention. This is a transition from summative to formative assessment. The emergence of generative AI (GenAI) has introduced a new dimension to English language teaching in TVET. According to Sahidan, Hashim, and Jasmi (2026), AI empowerment in vocational education enables the establishment of simulated professional environments that allow students to practice technical terminology without fear of peer judgment, while simultaneously supporting vocational teaching through personalized learning pathways tailored to students' varying levels of proficiency. In Pahang Community Colleges, students often lack exposure to international industry standards and to AI-driven tools that provide personalized feedback on pronunciation and technical writing.

Artificial Intelligence (AI) is revolutionizing vocational English by enabling extensive capabilities. This is supported by Sokolova (2025), who found that AI-powered instruction significantly enhances student performance through real-time feedback and adaptive assessments, which are essential in fast-paced TVET environments. Moreover, the study highlights that AI integration promotes adaptive learning paths, enabling discipline-specific language activities, for example, customizing linguistic exercises differently for students in automotive and culinary programs within the same English module, thereby further strengthening learning outcomes. This degree of personalization was previously impossible under conventional leadership models but is now epitomized by Education 4.0 (Moraes et al., 2023). The integration of AI also demands a shift in assessment methods, moving from rote memorization to evaluating how students interact with AI to solve complex linguistic tasks (Eden, Chisom, & Adeniyi, 2024).

Educational leadership is no longer just about managing people; it is about managing the digital culture. Schmitz et al. (2023) emphasize that 'Digital Leadership' requires leaders to serve as role models in technology use, and in Pahang, where rural colleges face challenges with internet connectivity, institutional readiness depends on a 'top-down' support system in which management provides not only the necessary software but also the psychological safety for educators to take risks, experience failure, and learn. This culture of innovation distinguishes a future-ready college from one that is merely digitizing old methods. Effective Educational Leadership and Management (ELM) must prioritise the "humanware" aspect, ensuring that lecturers receive continuous emotional and technical support during the transition to Digital Learning 4.0. In the absence of a leader who champions a digital-first mindset, even the most expensive technological tools will be underutilized or dismissed by the teaching staff.

For TVET students at Pahang Community Colleges, who often prefer kinesthetic and visual learning styles, the move toward future trends like Augmented Reality (AR) and Virtual Reality (Chaudhari, Ponnuswamy, Muqem, & Bhaladhare, 2025) provides a bridge between theoretical English and practical application. Mayer (2024) emphasizes that when educational technology aligns with cognitive theories, students show higher retention of grammatical and technical vocabulary, which are essential for their future employability in a globalized IR 4.0 workforce.

The national policy frameworks significantly influence the direction of English Language education in Pahang. The Twelfth Malaysia Plan and the National TVET Policy 2030 (Economic Planning Unit Prime Minister's

Department, 2021) emphasize the internationalization of Malaysian vocational graduates. This policy push requires a "Total Campus Approach" to English proficiency, and leadership ensures that English is integrated into technical workshops, rather than just confined to the language classroom.

According to Zainuddin et al. (2024) for such policy-driven reforms to succeed at the local level (such as in Pahang), there must be a collaboration between federal directives and local institutional management. This collaboration is mediated by the ELM practices of college directors, who must incorporate national goals into local action plans that address the unique socio-economic challenges of their specific student demographics.

3. METHODOLOGY

3.1. Research Design

This study utilized a descriptive research design using quantitative data. This approach aligns with the study's goal of objectively measuring leadership practices, technology use, and emerging education trends. The positivist paradigm facilitates the examination of relationships among variables through quantifiable indicators and statistical analysis, yielding evidence-based insights into the phenomena under investigation (Haleem, Javaid, Qadri, & Suman, 2022). Cross-sectional surveys have been widely used in prior research on technology integration and digital learning initiatives, especially within the Education 4.0 framework, where understanding current circumstances is crucial for guiding future advancements (Bordoloi, Das, & Das, 2021; Bujang, Selamat, Krejcar, Maresova, & Nguyen, 2020). The population comprises students aged 18 and above who are affiliated with community colleges in Pahang. This population was deemed suitable, as it represents individuals directly involved in English language learning within the TVET context, where leadership practices and technology integration play an important role in supporting Education 4.0 initiatives (Bujang et al., 2020). A stratified random sampling technique was employed to choose the sample. In this approach, the population is divided into smaller groups, or "clusters," from which samples are randomly selected. This technique was employed to ensure a structured and representative selection of participants. In the first stage, all community colleges in Pahang were identified and treated as clusters. In the second stage, official records of students enrolled in English language courses for the 2024/2025 academic session were obtained from the pertinent institutions. The total accessible population comprised 1,595 students. The sample size was determined using commonly accepted sampling guidelines for quantitative survey research, with a 95% confidence level and a 5% margin of error, resulting in a minimum required sample size of 358 respondents. This approach is consistent with quantitative studies that aim to obtain reliable and generalizable findings through survey-based data collection (Bordoloi et al., 2021).

3.2. Instruments

The primary tool for data collection was a self-administered questionnaire, designed in both English and Malay to ensure clarity and comprehension among all participants. The questionnaire was adapted and aligned with recent literature on educational technology and leadership in TVET and digital learning contexts (Fitria, 2022; Haleem et al., 2022). The questionnaire was structured into seven sections to comprehensively capture demographic information, current practices, perceptions of technology, leadership attributes, and future planning.

Section A collected demographic data, including gender, age, college affiliation, and years of study. Section B focused on identifying the technology tools currently used in English classes through multiple-choice questions. Sections C to F employed a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) to measure participants' perceptions of: Technological Advancements (TAI – 5 items): Familiarity with and openness to emerging educational technologies. Current Practices (CPI – 6 items): Aspects such as the conduciveness of the learning environment and the relevance of the curriculum. Educational Leadership Attributes (ELI – 10 items): including communication skills, support for innovation, and adaptability. Future Planning and Adaptability (FD – 3 items): clarity of vision and strategic preparation for future educational trends. The instrument was subjected to content and

face validation by two academic experts holding doctoral qualifications. Minor refinements were made based on feedback. A pilot study involving 40 participants was conducted to test clarity and feasibility. The results confirmed that the digital distribution method, implemented via Google Forms, was efficient and accessible, aligning with practices observed in contemporary digital learning research. It clarified certain aspects of technology use and leadership practices, thereby enhancing the instrument's clarity and relevance to the study's objectives. Reliability analysis using Cronbach's Alpha indicated strong internal consistency for all scaled constructs: TAI ($\alpha = 0.892$), CPI ($\alpha = 0.915$), ELI ($\alpha = 0.929$), and FD ($\alpha = 0.752$), demonstrating that the questionnaire was both reliable and appropriate for the study.

3.3. Procedures

Data were collected via online questionnaires distributed through official Telegram and WhatsApp groups used by lecturers and students. A total of 366 responses were received. Following data screening and cleaning procedures, including the removal of incomplete responses and identified outliers, 358 valid responses were retained for analysis.

3.4. Data Analysis

The collected data were analyzed using SPSS version 28 through a structured, multi-stage process. Initially, the dataset underwent data cleaning to address missing values and identify both univariate and multivariate outliers. Descriptive statistics, correlation, and regression were employed to analyze the data.

3.5. Ethical Issues

Prior to data collection, ethical approval was obtained from the UNITAR Research Ethics Committee, Faculty of Education and Humanities. In addition, the Research and Innovation Centre of the Department of Polytechnic and Community College Education (JPPKK) also approved data collection. Participation in the study was entirely voluntary, and informed consent was implied by completing the questionnaire. An introductory statement clearly assured participants of the confidentiality and anonymity of their responses, emphasizing that all data would be handled responsibly. All collected data were stored securely and used exclusively for this academic research (Haleem et al., 2022; Zhu, Alias, Hamzah, & Wahab, 2025).

4. FINDINGS

RQ1: What are the technological tools used in English language education at Pahang Community Colleges?

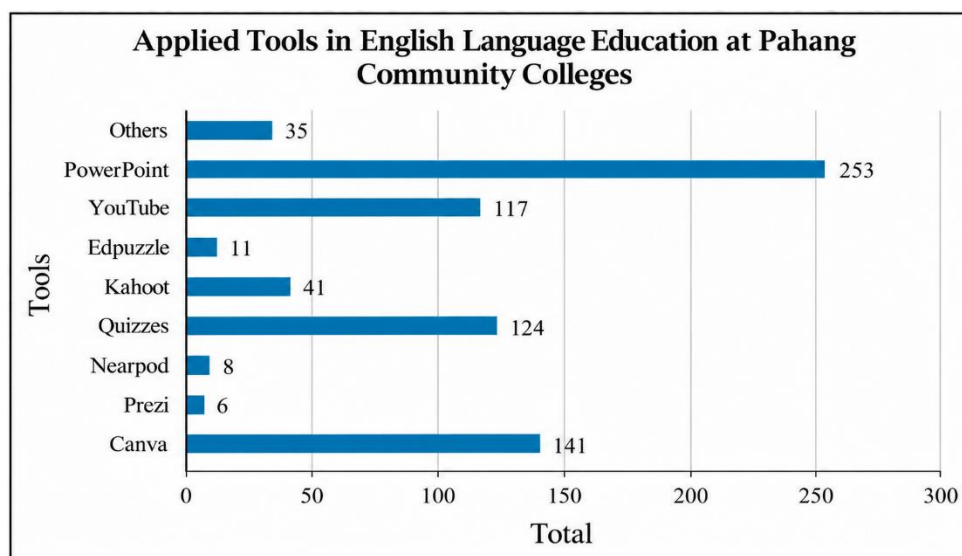


Figure 1. Bar Chart Showing Applied Tools in English Language Education at Pahang Community Colleges.

Figure 1 displays an overview of how various technological tools are integrated to improve English language instruction in Pahang's Community Colleges. PowerPoint is the most frequently used tool, with 253 instances. Meanwhile, Canva is the second-most-common tool, with 141 instances. As supplementary educational tools for English language learners, these institutions use quizzes (124 instances), YouTube (117 instances), and Kahoot (41 instances). Furthermore, others include Live Worksheets, Wordwall, Google Forms, Padlet, and Mentimeter (35 instances), including Edpuzzle (11 occurrences), Nearpod (8 instances), and Prezi (6 instances).

RQ2: What is the mean level for Future planning and adaptability (FD), Fundamental attributes of educational leadership (ELI), Technological advancements in English language education (TAI), and Current practice (CPI)?

Table 1. The mean level of FD, ELI, TAI, and CPI.

Variables	N	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic	Skewness		Kurtosis	
						Statistic	Std. Error	Statistic	Std. Error
FD	358	1	5	3.869	0.834	-0.605	0.129	0.675	0.257
TAI	358	1	5	3.827	0.815	-0.763	0.129	0.839	0.257
CPI	358	1	5	3.894	0.814	-0.829	0.129	1.127	0.257
ELI	358	1	5	3.952	0.828	-0.946	0.129	1.47	0.257

Note: Mean FD, TAI, CPI and ELI.

The future planning and adaptability dependent variable (FD), the technological advancement in English language education independent variable (TAI), the current practice independent variable (CPI), and the fundamental attributes of educational leadership independent variable (ELI) are all represented by descriptive statistics in Table 1. The mean values show the average scores for every variable. The means of FD, TAI, CPI, and ELI are 3.869, 3.827, 3.894, and 3.952, respectively. Nunnally (1978) guidelines in Psychometric Theory (Nunnally, 1978) state that the measurement instrument's scale or range should be considered when interpreting the mean values for the variables FD, TAI, CPI, and ELI. As such, the mean scores for FD, TAI, CPI, and ELI are at a high level at Pahang Community Colleges (Nunnally, 1978).

RQ3: Is there a correlation between Fundamental attributes of educational leadership (ELI), Technological advancements in English language education (TAI), and Current practice (CPI)?

Table 2. Pearson correlation coefficients between TAI, CPI, and ELI.

Correlation				
		TAI	CPI	ELI
TAI	Pearson Correlation	1	0.786**	0.766**
	Sig. (2-tailed)		0	0.01
	N	358	358	358
CPI	Pearson Correlation	0.786**	1	0.815**
	Sig. (2-tailed)	0		0.01
	N	358	358	358
ELI	Pearson Correlation	0.766**	0.815**	1
	Sig. (2-tailed)	0.01	0.01	
	N	358	358	358

Note: ** significant at the 0.01 level (2-tailed).

The Pearson correlation coefficients for the variables technological advancements in English language education (TAI), current practice (CPI), and fundamental attributes of educational leadership (ELI) are shown in Table 2. The correlation between TAI and CPI is high, $r = 0.786$, and significant at the 0.01 level (2-tailed). The relationship between TAI and ELI is also high, $r = 0.766$, and significant at the 0.01 level (2-tailed). The correlation between CPI and ELI is also high, $r = 0.815$, and significant at the 0.01 level (2-tailed). Based on Cohen's criteria (Cohen, 1988) and Kappa values (Landis & Koch, 1977), the strength of these correlations is typically defined as follows: minor or

weak, with the correlation coefficient (r) between 0.10 and 0.29. A moderate correlation coefficient (r) falls between 0.30 and 0.49, and a strong correlation coefficient (r) falls between 0.50 and 1.0. Strong positive correlations between the variables are evident in this instance, as shown by the correlations (0.786, 0.766, and 0.815), all of which fall within 0.50 and 1.0. Furthermore, these relationships appear statistically significant ($p = 0.01$, 2-tailed). These findings answer Research Question 3.

RQ4: What are the impacts of Fundamental attributes of educational leadership (ELI), Technological advancements in English language education (TAI), and Current practice (CPI) on Future planning and adaptability (FD)?

Table 3. Summary of the Multiple Regression Model.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.886 ^a	0.784	0.782	0.389

Note: ^a Predictors: (Constant), ELI, TAI, CPI.

Table 3 presents the model summary of the regression analysis. The dependent variable (FD) and the predictor variables (ELI, TAI, and CPI) have a high positive association, as indicated by the multiple correlation coefficient (R) of 0.886. 78.4% of the variance in the dependent variable (FD) is explained by the predictor variables, as indicated by an R-square of 0.784. The adjusted R-square estimates the power more conservatively at 0.782. The average deviation of the observed values from the regression line is indicated by the standard error of the estimate, which is 0.389.

Table 4. ANOVA Test Showing the Impacts of ELI, TAI, and CPI towards Future Planning Adaptability (FD).

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	194.782	3	64.927	428.782	0.000 ^b
	Residual	53.604	354	0.151		
	Total	248.385	357			

Note: ^a Dependent Variable: FD.

^b Predictors/ Independent Variables (Constant), ELI, TAI, CPI.

Results of the ANOVA test in Table 4 reveal that ELI, TAI, and CPI have a significant impact on Future Planning Adaptability (FD); $F=428.78$, $df=3$, $p=0.000$. This suggests that the independent variables accurately predict the dependent variable (FD) and are statistically significant. The amount of variance in the dependent variable accounted for by the predictor variables is shown by the regression's sum of squares (194.782). The variance in the dependent variable that the predictor variables cannot explain is represented by the residual sum of squares (53.604).

Table 5. Coefficients.

Coefficients ^a						
Model		Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	0.222	0.108		2.061	0.04
	TAI	0.003	0.044	0.002	0.059	0.953
	CPI	0.207	0.048	0.202	4.267	0.000
	ELI	0.717	0.046	0.711	15.632	0.000

Note: ^a Dependent Variable: FD.

Results in Table 5 reveal that CPI ($\beta = 0.202$, $t = 4.267$, $p = 0.000$) and ELI ($\beta = 0.711$, $t = 15.632$, $p = 0.000$) contribute significantly to predicting FD. However, the contribution of TAI is not significant ($\beta = 0.002$, $t = 0.059$, $p = 0.953$). Both ELI and CPI are strong predictors of FD. Nevertheless, TAI does not appear to be a good predictor of FD. These results answer Research Question 4.

5. DISCUSSION

This study's findings provide a detailed and complex portrait of the current and potential future landscape of English language education in Pahang Community Colleges, with significant implications for Educational Leadership and Management. The data provide insight into how leadership attributes, teaching practices, and perceptions of technology collectively shape readiness for future educational trends.

Among the constructs measured, Educational Leadership Attributes (ELI) received the highest mean score (3.95) and was identified as the strongest predictor of Future Planning and Adaptability (FD). This suggests that respondents perceive leadership as the fundamental pillar supporting progress in English-language education. Attributes rated highly included effective communication, collaborative support, promotion of continuous development, learner-centred advocacy, and adaptability. These acts embody the concepts of modern, transformative leadership, as stressed in contemporary literature, in which leaders inspire a shared vision, model innovative methods, and enable stakeholders to engage in meaningful educational reform (Schmitz et al., 2023; Zhu et al., 2025).

The findings suggest that the academic community at Pahang Community Colleges is primed for transformative leadership, indicating a latent readiness to embrace initiatives that improve teaching and learning quality. This challenges common assumptions that resistance to change lies primarily with lecturers or students. Instead, the data point to leadership as a key enabling factor that must be strategically leveraged to foster both pedagogical innovation and technology integration.

A notable contradiction emerged between technological openness (TAI) and actual technology usage. Although respondents scored high on TAI, actual classroom practices were dominated by conventional tools such as PowerPoint and YouTube. This indicates that the anticipation of technological advancement is currently abstract and aspirational, whereas practical adoption remains cautious. Advanced technologies highlighted in recent literature, such as artificial intelligence, virtual reality, and adaptive learning systems, have not yet been widely integrated into these colleges (Yu & Yu, 2023). Consequently, the immediate need is not the acquisition of high-end technologies but the strategic shift from passive content consumption to interactive, collaborative learning platforms. Tools such as Padlet, Nearpod, and simulation software offer options to operationalize constructivist pedagogy, moving beyond traditional lecture and presentation methods (Fitria, 2022).

The study highlights that the gap between aspiration and practice must be bridged through both leadership and training. Strong positive correlations among TAI, CPI, ELI, and FD (all > 0.76) suggest that respondents view technology, pedagogy, and leadership as interconnected components of a coherent educational system. Multiple regression analysis further clarified that ELI and CPI were the main drivers of future readiness, while TAI played a supporting role. In other words, confidence in the future (FD) depends primarily on effective teaching practices and empowering leadership, rather than the mere presence of technology (Haleem et al., 2022; Schmitz et al., 2023).

This insight carries significant practical implications. Investment priorities should emphasize leadership development programs, professional learning communities, and pedagogy-focused technology training, rather than hardware or software acquisitions alone. The findings suggest that the most critical form of “technology” to develop may, in fact, be human and social technology: the skills, collaboration, and leadership required to leverage existing tools effectively. Such investments can enable educators to maximize the potential of current technologies, creating learning environments that foster engagement, creativity, and adaptability among students (Yu & Yu, 2023; Zhu et al., 2025).

The findings illuminate a roadmap for future trends in English education at TVET institutions like Pahang Community Colleges, underscoring that advancing pedagogy and leadership infrastructure through strategic leadership, integrated teaching practices, and effective use of accessible technologies is more impactful than pursuing the latest devices or software, thereby building sustainable readiness for innovations that align with educational objectives and enhance student learning outcomes in both theory and practice (Bordoloi et al., 2021; Bujang et al., 2020).

At the national policy level, agencies such as the Department of Polytechnic and Community College Education (JPPKK) and the Ministry of Higher Education (MoHE) should move beyond simply mandating the provision of technology infrastructure or digital literacy courses. While access to devices and digital tools is important, it alone cannot ensure meaningful educational transformation. Instead, policy initiatives should prioritize the development of instructional leadership for TVET college leaders, supporting them in integrating technology in ways that are constructivist, learner-centered, and aligned with industry needs. Funding models could be linked to the creation of strategic digital pedagogy plans, demonstrating not only the availability of technology but also how it can enhance collaborative, communicative, and task-based language learning, ensuring that technological adoption serves pedagogical and organizational goals rather than merely increasing hardware inventories (Schmitz et al., 2023; Zhu et al., 2025).

At the institutional level, college leadership and management are encouraged to intentionally embrace a dual role as strategic visionaries and capacity builders. This involves conducting a comprehensive and honest audit of current pedagogical practices and technology use, co-developing a shared vision for the future of English language learning with lecturers, and placing sustained emphasis on building lecturer capacity through embedded, collaborative professional development programs rather than short-term, one-off workshops. By fostering a culture of continuous improvement and professional collaboration, leaders can ensure that pedagogical and technological innovations are not only introduced but also effectively implemented and sustained within the college environment (Bordoloi et al., 2021; Haleem et al., 2022). In addition, teachers aim to develop crucial 21st-century skills such as critical thinking, creativity, communication, and collaboration in their English language classrooms.

For lecturers, teachers, and educators, the findings reinforce their role as central agents of change. Instead of being passive recipients of technology, lecturers are empowered to reflect critically on their teaching philosophy and actively integrate technology in ways that complement communicative, task-based, and learner-centred instructional approaches. The research demonstrates that pedagogical practices, as captured by the Current Practices Index (CPI), are a key predictor of future readiness, underscoring the importance of reflective, evidence-informed teaching strategies responsive to both student needs and emerging educational trends (Fitria, 2022; Yu & Yu, 2023). By embracing this proactive stance, lecturers can directly influence their institutions' capacity to adapt to and benefit from technological advancements, thereby fostering both teaching excellence and student learning outcomes.

From a theoretical standpoint, this study reinforces the value of integrating transformational leadership and constructivist frameworks to enhance understanding of educational innovation. The findings suggest that we should not view leadership (ELI) and pedagogy (CPI) as secondary factors; rather, they are the primary drivers of an institution's future readiness. While being "tech-savvy" matters, this study highlights a crucial reality: actual progress in English language education does not come from tools alone, but from the synergy of visionary leadership and student-centered teaching (Schmitz et al., 2023; Zhu et al., 2025).

This study offers empirical evidence to guide policymakers, college leaders, and educators in fostering sustainable, innovation-driven English language education, ensuring that the system is prepared for future challenges while remaining aligned with the principles of Education 4.0 (Bordoloi et al., 2021; Bujang et al., 2020; Fitria, 2022; Schmitz et al., 2023; Yu & Yu, 2023; Zhu et al., 2025).

The findings provide key insights into leadership, pedagogy, and technology in English education at Pahang Community Colleges, though it has limitations. First, the sample composition is weighted toward students. This imbalance limits the generalizability of educators' findings, as lecturers may have different perceptions of leadership strategies, pedagogical practices, and technology adoption (Fitria, 2022; Zhu et al., 2025). Although students' perceptions are essential for understanding the learning environment, future studies should ensure a more balanced representation of both students and teaching staff to capture the full spectrum of insights.

Second, the use of a descriptive design constrains the ability to make causal inferences. The study captures perceptions at a single point in time, providing a snapshot of current practices and expectations, but cannot account

for changes over time or the longitudinal effects of leadership interventions or technology-integration initiatives (Bordoloi et al., 2021; Haleem et al., 2022). As a result, while correlations and predictive relationships can be identified, the dynamic interactions between leadership, pedagogy, and technology across multiple semesters remain unexplored.

Third, because this study is geographically limited to Pahang, the findings may not fully translate to community colleges in other Malaysian states. Every region has its own "vibe"; differences in institutional resources, leadership styles, and tech infrastructure can significantly shift outcomes (Schmitz et al., 2023; Zhu et al., 2025). Because regional administrative priorities often dictate how technology is adopted, there may be unique patterns elsewhere that this study could not capture. Consequently, one should be careful about applying these specific results to contexts outside of Pahang.

Fourth, this study employed only quantitative data; as such, future research should adopt mixed-methods approaches that combine quantitative data and qualitative data to obtain a deeper insight into the study (Hamzah, Radzi, & Omar, 2025). Triangulation of data can offer insights into how leadership and pedagogy evolve in response to technological advancements.

Moreover, future research should also examine how digital leadership practices influence educators' and students' engagement with technology, particularly in contexts where artificial intelligence (AI) supports instructional practices. Recent evidence highlights that effective digital leadership plays a critical role in facilitating student engagement and educational transformation (Kovacevic, Dagen, & Rajter, 2025). This study offers a strong empirical foundation and practical guidance for enhancing leadership and technology integration in English language education at Pahang Community Colleges. Future research is needed to expand, deepen, and contextualize these findings, ensuring that strategies are responsive to evolving educational demands and capable of fostering sustainable innovation across Malaysia's TVET sector.

6. CONCLUSION

This thorough analysis of educational leadership qualities and projected technology developments in English language instruction at Pahang Community Colleges produces important findings with theoretical and practical implications. The study identifies a distinct constellation of leadership attributes perceived as fundamental in this TVET context, emphasizing collaborative practices, learner-centered pedagogy, support for innovation, and strategic adaptability. These attributes coalesce into what might be termed a TVET-specific transformational leadership model that adapts general transformational principles to the particular challenges and opportunities of vocational language education. To address the combination of language pedagogy, occupational training, and institutional constraints typical of community college settings, this model refines and contextualizes established leadership theories rather than radically departing from them.

Concurrently, the research indicates a complex technical landscape with a high degree of theoretical openness combined with a practical focus on well-established technologies that serve conventional pedagogical purposes. This trend indicates that the most immediate and practical technical breakthroughs involve strategic progression along a continuum of pedagogical integration rather than leaps to cutting-edge technologies such as virtual reality or artificial intelligence (Shen & Tsai, 2023). The limited adoption of available intermediate technologies, such as interactive lesson platforms, points to barriers beyond awareness or attitude, highlighting the need for enhanced professional development, institutional support, and pedagogical redesign to fully leverage existing technological possibilities before pursuing more advanced applications. As institutions consider implementing more sophisticated technologies, they must also address the ethical dimensions highlighted in recent scholarship (Chan, 2023) while developing structured approaches to pedagogical governance (Lin & Yu, 2023).

Integrating these results reveals significant relationships between leadership and technology application in learning English. The relational framework required for coordinated technology implementation is established by

leadership that encourages cooperation. Leadership that supports learner-centered pedagogy fosters a mindset compatible with more sophisticated technological applications. Leadership that supports innovation and demonstrates adaptability cultivates an organizational climate conducive to technological experimentation and adaptation. These links imply that, rather than tackling these domains separately, attempts to improve English language instruction in TVET contexts should use integrated approaches that concurrently create leadership ability, pedagogical competence, and technical competency.

For practitioners and policymakers, this study offers several actionable implications. Leadership development programs for TVET institutions should explicitly address the specific attributes identified as fundamental in this context, with particular emphasis on building capacity for interdisciplinary collaboration, pedagogical innovation management, and strategic adaptation to changing educational and workplace landscapes. In addition to comprehensive professional development that covers both technical skills and pedagogical design principles for technology-enhanced language instruction, technology-integration strategies should adopt phased, pedagogy-driven approaches that prioritise tools with strong relevance to language-learning objectives. Institutional planning should create explicit alignment between leadership practices, technology investments, professional development offerings, and student learning outcomes, using data-informed approaches to guide continuous improvement.

The study also identifies several promising directions for future research. Longitudinal investigations could track how leadership and technology integration evolve in response to specific interventions or contextual changes. The underlying mechanisms, contextual elements, and implementation difficulties that shape the patterns identified in this quantitative analysis may be revealed through qualitative investigations. Research comparing various TVET fields or geographical areas may help differentiate between elements exclusive to language instruction and those more generally applicable in work environments. Future scenarios of technology-enhanced language instruction could be imagined and planned for by stakeholders through prospective research using participatory methodologies. As the field advances, research should also explore how emerging pedagogical governance frameworks can be adapted to different institutional contexts while addressing the ethical considerations associated with advanced educational technologies.

In conclusion, this research contributes to filling a significant gap in the context-specific understanding of educational leadership and technology integration in TVET language education. It provides a basis for more sophisticated methods to improve English language instruction that take into account the unique opportunities, limitations, and strategic requirements of vocational training institutions, drawing on empirically supported insights from Malaysian community colleges.

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Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.

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