Technology application, management and attitude towards the development of e-learning resource program

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Abstract

This study aims to address this gap by examining the perceptions, challenges, and attitudes towards technology management and e-learning among educators at Fuyang Institute of Technology in Anhui, China. The main objectives of the study are to assess technology management, determine challenges in e-learning development, and evaluate attitudes towards technology among faculty and staff. A quantitative research approach was employed, involving participants from various departments, with a stratified random sampling technique utilized to ensure representativeness. The results reveal positive attitudes towards technology adoption and development, despite challenges in infrastructure, knowledge, and facilities. Key findings include significant relationships between technology management and profile variables, as well as between challenges in e-learning and attitudes towards technology. This study contributes to the growing knowledge in technology integration and e-learning practices by highlighting the importance of addressing challenges and fostering positive attitudes towards technology adoption. A significant recommendation stemming from this research is the implementation of targeted training programs to enhance technology proficiency and promote a culture of innovation and collaboration among faculty and staff.

Keywords: technology management, e-learning, attitudes towards technology, challenges, training programs

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1. Introduction

In recent years, the global education landscape has undergone a significant shift toward the digitization of learning, fueled by technological advancements and the rising demand for flexible and accessible education. E-learning resource programs have emerged as a crucial tool for promoting interactive and engaging learning experiences as nations endeavor to embrace the digital transformation. This proposal intends to investigate the application, management, and challenges teachers face when utilizing e-learning resource programs in the Chinese province of Anhui, taking into account the historical context of digitization in education, gamification, and the enhancement of teacher and student engagement.

This study focuses on the Chinese province of Anhui as a microcosm of the country's educational landscape, where technology integration in classrooms has gained momentum in recent years. The pervasive adoption of digital platforms and devices has enabled the creation and implementation of e-learning resource programs. These programs incorporate a vast array of digital tools, resources, and interactive activities intended to enhance the learning experience and encourage student engagement. The incorporation of gamification elements is a prominent aspect of e-learning resource programs. Gamification employs game-like mechanics and characteristics to motivate students, encourage active participation, and foster a sense of accomplishment. Educators can create a more immersive and pleasurable learning environment by incorporating gamified elements, such as leaderboards, badges, and rewards. In addition, gamification has the potential to improve students' problem-solving skills, critical thinking abilities, and collaborative abilities, thereby influencing their overall academic performance positively.

Teachers' effective utilization and management of e-learning resource programs is another crucial aspect of the digitization of learning. In selecting, implementing, and integrating digital tools into their teaching practices, teachers play a crucial role. As a result, it is essential to comprehend the challenges teachers confront in this context, such as technological proficiency, time constraints, and pedagogical adaptation. Policymakers and educational stakeholders can provide the necessary support and training to empower instructors and maximize the potential of e-learning resource programs by identifying these obstacles. The recent COVID-19 pandemic has further emphasized the importance of e-learning resource programs, as educational institutions around the globe have been subjected to unprecedented disruptions. As schools and universities transitioned to remote or hybrid learning models, the dependence on digital tools and platforms grew. The pandemic has accelerated digital adoption and highlighted the imperative need for effective e-learning solutions capable of bridging the gap between traditional and digital modes of education. Considering these developments, the purpose of this research proposal is to investigate the application, management, and challenges instructors face when utilizing e-learning resource programs in a school in the Chinese province of Anhui. Through an examination of the history of digitization in education, the incorporation of gamification, and the enhancement of teacher and student engagement, this study aims to shed light on the potential benefits and challenges associated with e-learning resource programs in the Chinese educational context.

Objective of the Study - This paper aims to investigate the profile of the respondents, their attitudes towards e-learning, the level of technology application, and the extent of e-learning management at the Fuyang Institute of Technology in Anhui, China. Specifically, it sought to assess the Technology Management in terms of challenges in e-learning, benefits of e-learning, and leisure interest on e-learning innovations and use of computers; Determine the challenges in development of the eLearning in terms of technology challenge, knowledge in technology challenge, and facilities and environmental challenge; Assess the Attitude Towards Technology in terms of Acceptance in Technology, Technology and Development, Pursuing Technology,

Technology and Administration, Internet Technology, and Trusting Technology; Test significant relationships among Technology Management, challenges in development of the eLearning and Attitude Towards Technology; and Create a training plan in the use of technology applications and the extent of e-learning management in Fuyang Institute of Technology

2. Methods

Research Design - This study utilizes a quantitative descriptive research design, employing a survey methodology to gather data on technology application, challenges, and attitudes towards e-learning management at Fuyang Institute of Technology in Anhui, China. The quantitative descriptive approach enables systematic collection of numerical data, offering a comprehensive overview of technology integration in education. Additionally, correlational analysis will explore relationships between technology management, e-learning challenges, and attitudes towards technology, aiming to identify patterns and connections within the educational context. This combined approach facilitates evidence-based decision-making and provides valuable insights for optimizing e-learning practices within the institution.

Participants of the Study - The participants of this study were 398 Chinese higher vocational college teachers currently engaged in e-learning. To ensure diversity in the sample, participants were selected from different age groups, years of service, educational attainment, and varying levels of e-learning experience. A purposive sampling method was employed to ensure representation across different demographic factors.

Data Gathering Instrument - The data gathering instrument utilized in this study is a structured questionnaire comprising several sections aimed at capturing information related to the respondents' profile, attitudes towards e-learning, challenges in e-learning development, and technology application. The questionnaire is subjected to the criticism of the adviser for proper scrutiny of the instrument. The questionnaire divided into 4 parts : the first part : the profile of the respondents as to : gender, year of study and major. The second to fourth part include the questionnaire concerning Technology Management, challenges in development of the eLearning and Attitude Towards Technology

Data Gathering Procedure - The data gathering procedure for this study is meticulously structured to ensure the comprehensive collection of data from respondents. It begins with the preparation phase, where a questionnaire is designed, refined, and reviewed to encompass key variables related to respondents' profiles, attitudes towards e-learning, and challenges in e-learning development. Following this, the questionnaire is distributed to a diverse group of Chinese higher vocational college teachers engaged in e-learning, ensuring representation across various demographic factors. Participants are provided with clear instructions and ample time to complete the questionnaire, either in person or electronically. Throughout the process, quality control measures are implemented to maintain the integrity and reliability of the data, including checks for completeness and adherence to ethical principles.

Data Analysis - The data gathered were tabulated and analyzed according to the following statistical methods or tools. Frequency distribution was used to express the profile variable. Weighted mean ranking was employed to measure the Technology Management, challenges in development of the eLearning and Attitude Towards Technology. Analysis of Variance (ANOVA) was utilized to significant difference when grouped according to profile Pearson Correlation Coefficient was use to test the relationship among Technology Management, challenges in development of the eLearning and Attitude Towards Technology.

Ethical Considerations - The confidentiality of research data was strictly maintained, ensuring the anonymity of all participants involved in this study. To uphold this confidentiality, the identities of students, cooperating teachers, and schools remained unidentified throughout the research process. For the purpose of statistical analysis and data presentation, codes or numbers were assigned to anonymize the responses gathered from the questionnaire. This approach allowed researchers to aggregate and analyze the data without compromising the privacy or confidentiality of individual participants.

3. Results and discussion

Table 1

Summary Table on Technology Management

Indicators	WM	VI	Rank
Challenges in e-learning	3.05	Agree	3
Benefits of e-learning	3.12	Agree	2
Leisure interest on e-learning innovations and use of computers	3.15	Agree	1
Composite Mean	3.05	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 1 summarize the respondents assessment on technology management in terms of challenges in eLearning, benefits of e-learning and leisure interest on e-learning innovations and use of computers. Based on the findings presented in Table, it seems that respondents generally exhibit a positive attitude towards leisure interest in e-learning innovations and the use of computers, followed by a favorable perception of the benefits of e-learning. The composite mean of 3.05 indicates a moderate level of agreement among respondents regarding these aspects. Among the indicators cited, leisure interest on e-learning innovations and use of computers got the highest mean score of 3.42, followed by benefits of e-learning (3.12). Meanwhile, challenges in eLearning (3.05) ranked the least.

The highest mean score of 3.42 for leisure interest on e-learning innovations and use of computers suggests that respondents are particularly interested and engaged in exploring and utilizing technology for leisure and educational purposes. This finding implies a strong inclination towards integrating technology into various aspects of their lives, including both leisure activities and educational pursuits. This highlights the potential for leveraging individuals' existing interest in technology to enhance engagement and participation in e-learning initiatives. This finding aligns with the growing trend towards digitalization and technology integration in educational settings, where educators and learners are increasingly leveraging innovative tools and platforms to enhance teaching and learning experiences. Henriksen et al. (2021) and Saxena et al. (2021) have highlighted the increasing interest and enthusiasm among educators and learners for leveraging technology in educational practices. They emphasize the potential benefits of e-learning, such as increased accessibility, flexibility, and personalized learning experiences. Consequently, individuals who perceive greater benefits of e-learning are more likely to exhibit positive attitudes towards technology, as reflected in the findings from Table.

Following closely, the mean score of 3.12 for the benefits of e-learning indicates that respondents perceive various advantages associated with online learning. These benefits may include increased accessibility, flexibility, and effectiveness of educational content delivered through digital platforms. This finding underscores the importance of emphasizing and leveraging the positive outcomes of e-learning to encourage its adoption and utilization among learners and educators. This indicates that respondents recognize and appreciate the advantages and opportunities associated with e-learning approache. The positive perception of the benefits of e-learning reflects a growing acceptance and adoption of technology-enabled learning solutions in educational contexts. Teng et al. (2022) have investigated the factors affecting learners' adoption of an educational metaverse platform, highlighting factors such as intrinsic motivation, curiosity, and perceived enjoyment.

Conversely, challenges in eLearning received the lowest mean score of 3.05, indicating that respondents perceive fewer obstacles or difficulties in the realm of e-learning compared to their interest in and perceived benefits of technology use. This suggests that while challenges may exist, they are not perceived as significant deterrents to engagement with e-learning initiatives. This finding suggests that efforts to address challenges in e-learning should not overshadow the potential benefits and opportunities associated with technology integration in education. This findings provide valuable insights into respondents' perceptions and attitudes towards technology management in e-learning, highlighting the importance of capitalizing on individuals' interest in technology to promote engagement and maximize the benefits of online learning.

The observed relationship between technology management and challenges in e-learning is further supported by literature examining the role of technology in enhancing engagement and motivation in educational contexts. Ferrer et al. (2022) have explored how technology-enabled learning environments can foster student engagement, motivation, and active participation. They emphasize the importance of effective technology management in creating supportive and engaging learning environments that address challenges and promote positive attitudes towards technology among students and educators.

Table 2

Summary Table on the Challenges in the Development of E-learning

Indicators	Weighted Mean	Verbal Interpretation	Rank
Technology challenge	3.33	Agree	1
Knowledge in technology challenge	3.26	Agree	2.5
Facilities & environmental challenge	3.26	Agree	2.5
Composite Mean	3.28	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 2 summarize the respondents assessment on challenges in the development of e-learning in terms of Technology challenge, Knowledge in technology challenge, Facilities and environmental challenge. The composite mean of 3.28 indicates that the respondents agreed in general. Among the indicators cited, Technology challenge got the highest mean score of 3.33, Meanwhile, Knowledge in technology challenge, Facilities and environmental challenge (3.26) ranked the least. The highest mean score for technology challenge suggests that respondents view limitations in technological infrastructure, such as insufficient bandwidth, outdated equipment, and connectivity issues, as significant barriers to the effective implementation of e-learning programs. This finding underscores the critical importance of addressing technological barriers to ensure equitable access to digital learning resources and opportunities. This highlights the need for investment in technology infrastructure and resources to support the integration of ICT in education.

Conversely, knowledge in technology challenge and facilities/environmental challenge received lower mean scores, indicating that respondents perceive these challenges as relatively less pressing or impactful compared to technology-related challenges. While knowledge-related challenges encompass issues such as teacher readiness, pedagogical support, and content development, facilities/environmental challenges may include factors like physical space constraints, resource availability, and institutional policies. These findings suggest that while knowledge and facilities/environmental challenges are recognized, they may not be perceived as immediate priorities for intervention or resource allocation compared to technology-related challenges.

Literature supports these interpretations by highlighting the pervasive influence of technology-related challenges on the successful implementation of e-learning initiatives. Studies have identified factors such as infrastructure limitations, technological access barriers, and insufficient technical support as significant impediments to the effective integration of ICT in education (Shah, 2022). Additionally, research underscores the importance of addressing knowledge-related challenges through professional development programs and pedagogical support to enhance educators' digital literacy and instructional practices (Liljekvist,et. al.,2021; Falloon, 2020). These findings provide valuable insights into respondents' perceptions of challenges in the development of e-learning and underscore the importance of addressing technological, knowledge, and facilities/environmental barriers to promote equitable access to quality digital learning opportunities.

Table 3 summarize the assessment on the Attitude Towards Technology in terms of Acceptance in Technology, Technology and Development, Pursuing Technology, Technology and Administration, Internet Technology, and Trusting Technology. The respondents generally exhibit a positive attitude towards various aspects of technology, as indicated by the composite mean of 3.32. The responses suggest a general agreement among respondents regarding their attitudes towards different dimensions of technology.

Table 3

Summary Table on the Attitude Towards Technology

Indicators	Weighted Mean	Verbal Interpretation	Rank
Acceptance in Technology	3.22	Agree	6
Technology and Development	3.28	Agree	5
Pursuing Technology	3.34	Agree	4
Technology and Administration	3.35	Agree	2
Internet Technology	3.35	Agree	2
Trusting Technology	3.35	Agree	2
Composite Mean	3.32	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Among the indicators cited, Technology and Administration, Internet Technology, and Trusting Technology got the highest mean score of 3.35, followed by Pursuing Technology (3.34). The indicators with the highest mean scores, "Technology and Administration," "Internet Technology," and "Trusting Technology," all received a mean score of 3.35, followed closely by "Pursuing Technology" with a mean score of 3.34. This indicates that respondents generally hold positive attitudes towards these dimensions of technology, including its use in administration, internet-based activities, pursuing technological advancements, and trust in technology. These findings suggest that respondents value technology's role in facilitating administrative processes, accessing information through the internet, pursuing technological innovations, and placing trust in technology as a reliable tool. Meanwhile, Technology and Development got the mean score of 3.28 and, Acceptance in Technology (3.22) ranked the least. Conversely, the indicator "Acceptance in Technology" received the lowest mean score of 3.22, while "Technology and Development" received a mean score of 3.28. This suggests that respondents may have slightly less positive attitudes towards the broader acceptance of technology and its developmental aspects. This may indicate potential areas where attitudes towards technology adoption and its developmental trajectory could be further explored or addressed to enhance overall acceptance and engagement with technology.

Literature supports these interpretations by highlighting the multifaceted nature of attitudes towards technology and the various factors influencing individuals' acceptance, engagement, and trust in technology (Mubarak,et. al.,2020). Studies have examined the impact of factors such as perceived usefulness, ease of use, control, and trust on individuals' attitudes and behaviors towards technology adoption and utilization (Saxena, et al. 2021). These findings provide valuable insights into respondents' attitudes towards different dimensions of technology and underscore the importance of fostering positive attitudes, trust, and engagement to promote effective utilization and integration of technology in various domains.

Table 4 presents the association between Technology Management and challenges in the development of e-learning. It was observed that the computed R-values indicates a moderate direct correlation, however, only benefits of e-learning and technology challenge and leisure interest on e-learning innovations and use of computers and facilities and environmental challenge shows significant relationship since resulted p-values were less than the alpha level. This means that there was significant relationship exists and implies that the better is the technology management, the more challenges encountered. Thus, the data analysis conducted on the responses has determined that there is a statistically significant relationship between these two variables.

The observed moderate direct correlation between Technology Management and Challenges in the Development of E-learning suggests that there is a relationship between how technology is managed and the challenges encountered in e-learning initiatives. However, it's notable that only certain aspects of technology management show a significant relationship with specific challenges in e-learning, namely benefits of e-learning, technology challenge, leisure interest on e-learning innovations and use of computers, and facilities and environmental challenge.

Table 4

Relationship Between Technology Management and challenges in the development of e-learning

Challenges in e-learning	r-value	p-value	Interpretation
Technology challenge	0.053	0.294	Not Significant
Knowledge in technology challenge	0.038	0.452	Not Significant
Facilities and environmental challenge	0.098	0.052	Not Significant
Benefits of e-learning			
Technology challenge	.116*	0.021	Significant
Knowledge in technology challenge	-0.058	0.252	Not Significant
Facilities and environmental challenge	0.000	0.993	Not Significant
Leisure interest on e-learning innovations and use of computers			
Technology challenge	0.061	0.222	Not Significant
Knowledge in technology challenge	0.088	0.079	Not Significant
Facilities and environmental challenge	.149**	0.003	Significant

Legend: Significant at p-value < 0.01

As technology management improves, organizations may scale up their e-learning efforts or expand their technological capabilities to reach larger audiences or achieve more ambitious goals. Scaling up operations can introduce logistical, operational, or resource-related challenges that need to be addressed effectively. Moreover, As technology management becomes more sophisticated and comprehensive, the scope and complexity of e-learning initiatives may also expand. With more advanced technology comes the potential for more intricate systems, integrations, and processes, which could introduce new challenges or complexities that need to be addressed.

The significant relationships indicate that as technology management improves, certain challenges in the development of e-learning become more apparent or pronounced. This may seem counterintuitive at first, as one might expect effective technology management to mitigate challenges rather than exacerbate them. The relationship between technology management and e-learning challenges is multifaceted and context-dependent. As organizations invest more resources and effort into technology management, they may become more attuned to the complexities and nuances of e-learning initiatives. This increased awareness and scrutiny may lead to a greater recognition of existing challenges or the emergence of new challenges that were previously overlooked. In other words, improved technology management may uncover latent issues or highlight areas in need of further attention or improvement.

Literature supports this interpretation by highlighting the dynamic and multifaceted nature of technology management and its implications for educational initiatives such as e-learning. Studies have emphasized the importance of proactive and strategic technology management practices in addressing challenges and maximizing the benefits of technology integration in educational settings (Manubag, et al. 2023). However, effective technology management requires a comprehensive understanding of the complexities and potential pitfalls associated with e-learning initiatives, including challenges related to technology adoption, infrastructure, pedagogy, and organizational culture (Hannache-Heurteloup,et. al.,2020).The significant relationships between technology management and challenges in the development of e-learning underscore the need for a nuanced and proactive approach to technology management in educational contexts. Addressing challenges head-on and continuously refining technology management strategies, organizations can enhance the effectiveness and sustainability of their e-learning initiatives

Table 5 displays the association between Technology Management and Attitude Towards Technology. It was observed that the computed r-values indicates a moderate direct correlation, however, only benefits of e-learning and pursuing technology; and leisure interest on e-learning innovations and use of computers and acceptance in Technology resulted p-values were less than the alpha level. This means that there was significant

relationship exists and implies that the better is the technology management, the better attitude towards technology.

Table 5

Relationship Between Technology Management and Attitude Towards Technology

Challenges in e-learning	r-value	p-value	Interpretation
Acceptance in Technology	-0.046	0.358	Not Significant
Technology and Development	0.067	0.180	Not Significant
Pursuing Technology	0.011	0.834	Not Significant
Technology and Administration	-0.033	0.510	Not Significant
Internet Technology	-0.069	0.171	Not Significant
Trusting Technology	-0.038	0.452	Not Significant
Benefits of e-learning			
Acceptance in Technology	-0.078	0.122	Not Significant
Technology and Development	0.014	0.786	Not Significant
Pursuing Technology	.101*	0.044	Significant
Technology and Administration	-0.014	0.782	Not Significant
Internet Technology	-0.01	0.838	Not Significant
Trusting Technology	0.022	0.665	Not Significant
Leisure interest on e-learning innovations and use of computers			
Acceptance in Technology	.122*	0.015	Significant
Technology and Development	0.06	0.233	Not Significant
Pursuing Technology	-0.063	0.207	Not Significant
Technology and Administration	0.038	0.447	Not Significant
Internet Technology	-0.071	0.156	Not Significant
Trusting Technology	-0.01	0.846	Not Significant

Legend: Significant at p-value < 0.01

The observed moderate direct correlation between Technology Management and Attitude Towards Technology suggests that there is a relationship between how technology is managed and individuals' attitudes towards technology. Notably, significant relationships were found between certain aspects of technology management, such as benefits of e-learning, pursuing technology, leisure interest on e-learning innovations and use of computers, and specific dimensions of attitude towards technology, including acceptance in technology.

The significant relationships indicate that as technology management improves, individuals tend to have more positive attitudes towards technology. This finding aligns with the notion that effective management and implementation of technology initiatives can contribute to positive perceptions and attitudes among users. When technology is managed well, it can enhance efficiency, productivity, and user experiences, leading to greater acceptance and appreciation of technology among stakeholders. Organizations with strong technology management practices are better equipped to provide adequate support, resources, and training to users, thereby fostering a positive and supportive environment for technology adoption and utilization. Additionally, effective technology management may lead to the successful implementation of innovative technology solutions, which can enhance users' perceptions of technology and its potential benefits.

Literature supports this interpretation by highlighting the importance of organizational support, leadership, and resources in shaping individuals' attitudes towards technology (Hennessy, et al. 2022). Studies have shown that factors such as perceived usefulness, ease of use, and organizational support play significant roles in influencing users' attitudes and behaviors towards technology adoption and utilization (Faqih, 2020). Therefore, fostering positive attitudes towards technology through effective technology management practices is essential for promoting successful technology adoption and utilization in organizations. The significant relationships

between technology management and attitude towards technology underscore the importance of strategic and proactive approaches to technology management in fostering positive perceptions and attitudes towards technology among users.

Table 6 illustrates the association between the challenges in the development of e-learning and Attitude Towards Technology. It was observed that the computed R-values indicates a moderate direct correlation however, only knowledge in technology challenge vs. Acceptance in Technology and Trusting Technology shows significant relationship because the resulted p-values were less than the alpha level. This means that there was significant relationship exists and implies that the lesser challenges experienced, the better attitude towards technology.

Table 6

Relationship between challenges in the development of e-learning and attitude towards technology

TECHNOLOGY CHALLENGE	r-value	p-value	Interpretation
Acceptance in Technology	0.019	0.701	Not Significant
Technology and Development	-0.067	0.181	Not Significant
Pursuing Technology	0.013	0.790	Not Significant
Technology and Administration	0.064	0.199	Not Significant
Internet Technology	-0.004	0.939	Not Significant
Trusting Technology	-0.083	0.099	Not Significant
Knowledge in technology challenge			
Acceptance in Technology	-.100*	0.047	Significant
Technology and Development	-0.072	0.152	Not Significant
Pursuing Technology	-0.058	0.250	Not Significant
Technology and Administration	0.091	0.069	Not Significant
Internet Technology	0.015	0.761	Not Significant
Trusting Technology	-.166**	0.001	Significant
Facilities and environmental challenge			
Acceptance in Technology	-0.051	0.310	Not Significant
Technology and Development	-0.006	0.906	Not Significant
Pursuing Technology	-0.004	0.937	Not Significant
Technology and Administration	0.022	0.659	Not Significant
Internet Technology	0.022	0.662	Not Significant
Trusting Technology	-0.072	0.153	Not Significant

Legend: Significant at p-value < 0.01

The observed moderate direct correlation between Challenges in the Development of E-learning and Attitude Towards Technology suggests that there is a relationship between the challenges encountered in e-learning development and individuals' attitudes towards technology. Notably, significant relationships were found between specific challenges, such as Knowledge in Technology Challenge, and certain dimensions of attitude towards technology, including Acceptance in Technology and Trusting Technology.

The significant relationships indicate that as challenges in the development of e-learning decrease, individuals tend to have more positive attitudes towards technology. This finding aligns with the notion that overcoming barriers and challenges associated with technology implementation can lead to greater acceptance and trust in technology among users. When individuals perceive fewer obstacles or difficulties in utilizing technology, they are more likely to develop positive attitudes towards its use. Organizations and individuals who are better equipped to address challenges in e-learning development, particularly those related to knowledge in technology, may have greater confidence and trust in technology solutions. Additionally, overcoming challenges in technology implementation can lead to improved user experiences, increased efficiency, and enhanced

outcomes, which contribute to positive attitudes towards technology.

Literature supports this interpretation by highlighting the impact of challenges and barriers on individuals' attitudes and perceptions towards technology adoption and utilization (Sabah, 2020).Studies have shown that factors such as perceived ease of use, perceived usefulness, and perceived control play significant roles in shaping users' attitudes and behaviors towards technology (Faqih, 2020). Moreover, research has demonstrated that addressing challenges and barriers in technology implementation is essential for promoting successful technology adoption and utilization (Saghafian, et al. 2021; Taherdoost, 2022). Organizations that effectively manage and mitigate challenges in e-learning development are more likely to create supportive environments that foster positive attitudes towards technology among users. With this, the significant relationships between challenges in the development of e-learning and attitude towards technology underscore the importance of addressing barriers and obstacles to promote positive perceptions and attitudes towards technology adoption and utilization.

Proposed Training Plan

This proposed training plan aims to address key areas of technology management, challenges in e-learning, and attitude towards technology among faculty and staff at Fuyang Institute of Technology in Anhui, China. The plan outlines objectives, strategies, persons involved, and success indicators for each key result area. Under the key result area of technology management, strategies are proposed to enhance leisure interest in e-learning innovations and use of computers, invest in the benefits of e-learning, and address challenges in e-learning support and development. For challenges in the development of e-learning, objectives are set to tackle technology, knowledge, and facilities/environmental challenges, with corresponding strategies involving workshops, professional development courses, and fostering a collaborative culture. Finally, to address attitudes towards technology, initiatives focus on improving acceptance in technology, staying informed about technology developments, and fostering a culture of pursuing technology through workshops, knowledge-sharing sessions, and participation in technology-related fairs.

Table 7

Proposed Training Plan

Key Result Area	Objectives	Strategies	Persons Involved	Success Indicator
Technology Management				
Leisure interest on e-learning innovations and use of computers	To invest and adopt on E-learning for educational institutions	- Upgrade internet connectivity and bandwidth to ensure reliable access to e-learning platforms and resources. - Provide adequate hardware resources such as computers, tablets, and mobile devices for learners to access e-learning materials.	Administrators and Decision-Makers Educators and Instructors	- Measure the frequency of e-learning platform usage and learner engagement metrics such as course completion rates, participation levels, and interaction with content.
Benefits of e-learning	To invest and adopt on E-learning for educational institutions	- Invest in the development of high-quality e-learning content and resources tailored to the curriculum and learning objectives. - Collaborate with subject matter experts and instructional designers to create engaging and interactive e-learning materials.	Administrators and Decision-Makers Educators and Instructors IT and Technical Support Staff	- Assess student performance and achievement levels before and after the implementation of e-learning initiatives to determine the impact on learning outcomes and academic success.

Challenges in e-learning	To support the learners in an e-learning environment	- Establish online tutoring services, virtual office hours, and peer-to-peer support networks to assist learners with academic questions and challenges. - Provide technical support resources and troubleshooting guides to help students navigate technical issues related to e-learning platforms.	Educators and Instructors Instructional Designers and Content Developers Student Support Services Personnel	- Evaluate the accessibility features and accommodations provided within e-learning platforms and materials to ensure that all learners have equitable access to educational resources.
Challenges in the development of e-learning				
Technology challenge	to let teacher see the essence and benefit to develop technology in school	- Conduct workshops, seminars, and presentations highlighting the importance and benefits of technology integration in education. - Organize peer learning sessions where teachers can share their experiences and insights on effectively utilizing technology in their classrooms.	School administrators and leadership team Educational technology specialists or coordinators Instructional designers or curriculum developers Experienced teachers serving as mentors or coaches IT support staff or technicians	Increased participation and engagement in technology-related professional development activities.
Knowledge in technology challenge	to provide pedagogical support for teachers	- Offer professional development courses and workshops focused on pedagogical strategies for integrating technology into teaching practices. - Provide access to instructional designers or educational technologists who can offer personalized support and guidance on incorporating technology effectively.		Growth in the number of teachers incorporating technology into their lesson plans and instructional practices.
Facilities & environmental challenge	to encourage teachers of using ICT in school	- Foster a collaborative culture where teachers feel supported and empowered to experiment with new technologies and share their successes and challenges. - Provide access to reliable technology resources and tools, including software, hardware, and technical support, to facilitate the seamless integration of ICT into teaching practices.		Improvement in student learning outcomes and engagement as a result of technology integration.
Attitude Towards Technology				
Acceptance in Technology	To improve on the attitude and acceptance of technology	Technology Adoption Advocacy Workshops: Organize workshops to promote the importance of technology adoption and development for personal and institutional benefits.	Faculty members from relevant departments Administrative staff involved in technology procurement and	Increased Engagement: Measure the attendance and participation rates in technology adoption advocacy workshops and knowledge-sharing sessions

Technology and Development	To be informed among colleagues about the developments in technology.	Knowledge Sharing Sessions: Facilitate regular knowledge-sharing sessions where faculty and staff can share updates and insights about the latest developments in technology. Encourage open discussions and collaborative learning to foster a culture of continuous learning and innovation.	implementation IT personnel responsible for technical support and infrastructure maintenance	improvements in participants' understanding and familiarity with emerging technologies and their potential applications.
Pursuing Technology	To provide opportunity in visiting technology-related fairs	Technology Fair Participation: Actively participate in technology-related fairs, exhibitions, and conferences to explore new technologies, innovations, and best practices. Encourage faculty and staff to attend these events to gain exposure to emerging trends, network with industry experts, and explore opportunities for collaboration and partnership.		new connections established, collaborations initiated, and innovative ideas generated as a result of networking opportunities.

4. Conclusions and recommendations

Respondents generally perceived benefits of e-learning and expressed significant interest in leisure activities related to e-learning innovations and computer use. Challenges in e-learning were perceived to be relatively low compared to perceived benefits and leisure interest. Challenges in e-learning development were identified across technology, knowledge, and facilities/environmental domains. Specific challenges included insufficient bandwidth/speed, lack of adequate teacher skills, and insufficient resources such as internet-connected computers and interactive whiteboards. Respondents exhibited positive attitudes towards technology, particularly in acceptance, pursuit, and trust. However, variations were observed across different dimensions, with technology and administration scoring lower compared to other dimensions. Significant relationships were identified among perceptions, challenges, and attitudes towards technology and e-learning management among teachers. This means that there was significant relationship exists and implies that the better is the technology management, the more challenges encountered, the greater and positive attitudes towards technology. Researcher were able to develop a training plan in the use of technology applications and the extent of e-learning management in Fuyang Institute of Technology in Anhui, China based on the result of the study.

The Human Resource Office may develop targeted training programs to enhance technology skills and e-learning pedagogy among teachers, with a focus on addressing identified challenges. The University may invest in improving technology infrastructure and resources to support effective e-learning implementation, including adequate internet connectivity and access to necessary devices. The Program Director and Faculty may foster a culture of innovation and collaboration to encourage ongoing professional development and knowledge sharing around technology integration. Continuously assess and monitor the effectiveness of technology initiatives and interventions, adjusting strategies as needed to meet evolving needs and challenges. Implement a comprehensive training plan tailored to the specific needs and preferences of teachers at Fuyang Institute of Technology, incorporating insights from the study findings to promote effective technology use and e-learning management. Fuyang Institute of Technology in Anhui, China, may consider the training plan in the use of technology applications and the extent of e-learning management for future reference in their implementation. Future researchers may conduct similar study to further confirm the result of the study using a qualitative design.

5. Reference

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