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(IJEPC)<https://gaexcellence.com/ijepe>EXAMINING THE EFFECT OF E-TRAINING ON
LEADERSHIP READINESS OF UAE SCHOOL LEADERSFatima Obaid Mohamed Hassan Almarashda^{1*}, Ahmad Zainal Abidin Abd Razak²¹Faculty of Management and Economics, Universiti Pendidikan Sultan Idris, Malaysia P20211000151@siswa.upsi.edu.my <https://orcid.org/0009-0000-6370-3617>²faculty of Management and Economics, Universiti Pendidikan Sultan Idris, Malaysia ahmad.zainal@fpe.upsi.edu.my <https://orcid.org/0000-0001-8333-8020>

*Corresponding Author

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Abstract:

This paper has explored the effects of e-training on leadership preparedness in school leaders in the United Arab Emirates and what aspects of training are most important. The authors used a quantitative cross-sectional design to examine 237 valid responses to the questionnaire items of school heads who attended digital professional learning. Interactivity, active participation, collaboration, accessibility, and content/design quality were measured in e-training, and the preparedness, confidence, adaptability, and readiness to lead were measured by leadership readiness. The descriptive results indicated the general positive perceptions with the item means ranging between 3.22 and 4.15. Structural equation modeling showed that e-training had a significant predictive value on leadership readiness ($\beta = 0.827$) and leadership competence ($\beta = 0.176$), with leadership readiness having a strong predictive value on leadership competence ($\beta = 0.672$). Interactivity, active participation and collaboration at the dimension level had a strong impact on readiness and a strong impact on competence respectively. In key paths, accessibility and content/design quality did not play a crucial role as predictors. Mediation analysis showed that leadership readiness significantly mediated the effect of e-training on leadership competence (indirect effect = 0.556, 95% CI [0.430, 0.694], $p = 0.004$). The results indicate that to be developmentally effective, e-training must be interactive, participatory and collaborative and not just accessible or well packaged to enhance leadership development in the UAE context of reform-oriented school environment.

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Introduction

The reform of education in the United Arab Emirates has transformed school leadership to be an administrative role instead of being a strategic system change. That change is significant since policy articulation agendas are seldom unsuccessful, but instead, they are doomed when leaders are unable to shape grand mandates into consistent school practice. UAE scholarship in recent years indicates that professional development is the key element of this translation process, but its impact is not evenly distributed as the quality of implementation, the contextual fit, the cultural responsiveness of the implementation are uneven across schools and emirates Abuhassira et al. (2024); (Hojeij et al., 2024). In addition, the multicultural and quickly transforming educational environment of the UAE has a leadership requirement that goes beyond the traditional level of managerial competence (Abuhassira et al., 2024). It needs leaders who are able to rally employees, cope with policy pressure, incorporate technology, and maintain pedagogic change without losing contextual legitimacy. This means that it is not a question of whether school leaders should be trained in professional development, but rather what type of professional training produces psychological readiness to be able to enact leadership.

In that discussion, e-training is seen as a hopeful development as it has the potential to correct structural flaws of one-off, centrally forced, workshop-based development. Attractiveness of e-training, however, cannot be narrowed down to delivery efficiency. Digital professional learning can only be valuable when it alters the way leaders approach learning, rather than being limited to where they access learning (Abdallah et al., 2025). Studies on the UAE and Gulf educational development are starting to propose that technology-mediated learning can be consequential when it facilitates interaction, reflection, collaboration and long-term engagement as opposed to passive consumption of content (Al-Handhali et al., 2025; Hojeij & ElSayary, 2026). The theoretical significance of that pattern is that it might suggest that readiness is triggered less by convenience than by socially and cognitively challenging interaction.

The paper thus investigates the impact of e-training on the leadership preparedness of UAE school leaders. The emphasis on readiness is analytically explained by the fact that it embodies a developmental level between the exposure to professional learning and the potential to mobilize that learning into practice. A significant portion of the literature in the region has focused on the delivery of professional development, digital competence, or leadership outcomes, but limited publications have focused on the middle ground between these two

aspects that operationalize leadership learning (Ibrahim & Azzani, 2025). Such an omission undermines explanatory accuracy. Even a leadership programme that is available, well-planned and even positively rated, might fail to yield readiness unless it reinforces confidence, self-direction and perceived ability to act as a leader. Based on this, this paper will contend that leadership preparedness is not a marginal attitudinal by-product. It is the main tool that will make e-training educationally relevant in a reform-intensive environment like the UAE.

Literature Review

E-Training in the development of educational leadership

E-training has gone beyond just a mere digital copy of the workshop experience to a leadership development strategic architecture. Online training programmes in Oman had a significant effect on the professional and technical competence of school principals, although the results were different in relation to the previous experience of the participants and their involvement (Al-Handhali et al., 2025). This implied that readiness is not just created by digital platforms, but the design of learning interactions is important. An overview of professional development in the UAE highlights that successful programmes focus on active learning, collaboration and reflection (Shomotova & Ibrahim, 2025). Similarly, Abdallah et al. (2025) posit that technology integration must be systematic and supported through training as opposed to just having access to ICT equipment. They surveyed the teachers and found that their views on ICT are positive, but resources are distributed unevenly, and institutions do not support it properly.

E-training's effectiveness depends on its developmental properties. Online reproduction of the passivity and content-centric nature of traditional workshops is done in programmes that merely transfer lectures online. Conversely, interactive e-training helps leaders to think, talk, and reflect. According to Shomotova and Ibrahim (2025) digital portfolios and learning communities of practice promote reflective practice, self-assessment, and group problem-solving. The study by Al-Handhali et al. (2025) revealed that online training enhanced the competency of school principals in Oman due to the rich interactive learning and support provided. Likewise, Ismail et al. (2020) have found that e-training programmes aimed at aspiring school leaders in Malaysia enhanced their intention to persist in using the digital training in case they had collaborative exercises and feedback in them.

Nonetheless, the literature warns against presupposing that online delivery is necessarily innovative. According to Okunlola and Naicker (2025), unless there is a supportive leadership paradigm, technology integration will result in superficial adoption. The study highlights the importance of visionary leadership, digital learning culture, professional development, systemic improvement, and digital citizenship as vital aspects of digital leadership. Furthermore, e-training should be sensitive to cultural backgrounds; generic training can fail to accommodate the socio-cultural and language complexities and requirements that are common in the UAE (Shomotova & Ibrahim, 2025). On the whole, the e-training can be most effective when it is built on the principles of interaction, reflection, and cooperation of participants instead of active consumption of material.

Leadership Readiness in School Leadership

Leadership preparedness is different to competence or performance. It is stated to mean how leaders are ready and assured to take leadership roles in transformative situations. Ibrahim and

Azzani (2025) show that resilience, perceived organizational and self-efficacy are key elements to thrive among UAE principals. All these elements are what determine a state of readiness that allows leaders to put knowledge into practice. Abuhassira et al. (2024) demonstrate that such leadership practices as clarification of activities and participation are also largely effective in classroom interaction, hence, the leadership behaviour and not the position has an impact.

Emotional resilience and self-regulated learning is also linked to leadership readiness. The research on student engagement in higher education indicates that the leadership potential and employability are increased by developing the soft skills (communication, problem-solving, teamwork, etc.) at an early stage. According to Shomotova and Ibrahim (2025), student engagement reinforces the connection between the leadership potential and employability, which is why psychological preparedness is essential. The concept of readiness in the K-12 context includes a capability to address ambiguity, maintain reforms, and organize teachers around shared objectives (Hojeij & ElSayary, 2026). Therefore, leadership preparedness must be considered as a facilitating tool between the inputs of professional development and leadership behaviour.

Readiness as a psychological and behavioural construct is also highlighted in digital leadership research. According to Gao and Gao (2024), digital leadership involves a set of leadership style, digital competence and digital mindset that allow leaders to express a vision and establish an environment of digital maturity. Digital leadership is a convergence of transformational, transactional, and authentic leadership styles, yet agility, digital thinking, and willingness to lead change are demanded (Gao & Gao, 2024). This definition emphasizes the fact that digital leadership is not another style of leadership but a combination of leadership skills and digital skills- a synthesis that is required to be ready in the digital age.

The correlation between E-Training and Leadership Preparedness.

Even though e-training has a potential, its impact on leadership preparedness is not uniform. According to Al-Handhali et al. (2025), online training has been found to enhance professional and technical competence in the presence of interactive material and through continuous support. Not every digital training programme, however, can be translated into preparedness, however. The quality of course design and accessibility, although beneficial to participation, did not have a significant impact on readiness.

The results are consistent with the wider literature. According to Okunlola and Naicker (2025), leaders should have the capacity to be strategic, visionary and facilitating in an attempt to integrate technology. Interactivity promotes feedback and discussion, preventing the passive consumption and enhancing self-efficacy (Zeng et al., 2025). Teamwork facilitates the development of relational competencies and co-creation of solutions by the leaders and reflection and critical problem-solving by the participants. All these mechanisms contribute to the psychological preparedness to perform leadership activities. On the other hand, the participation is facilitated by accessibility and design quality, although it might not involve more in-depth cognitive or affective processes to prepare.

According to Zeng et al. (2025), visionary principals are able to influence teachers to utilize technology in a manner that gives them a clear vision, teacher training, and resource assurances. The perceptions of the teachers about the digital leadership of their principal will determine how the teachers are willing to use technology in the classroom (Zeng et al., 2025). These

results demonstrate that leadership preparation mediates between professional development and practice. Digital training can enhance knowledge but not behaviour, without preparation.

School Leadership in the UAE.

The educational environment in the UAE makes leadership preparedness more relevant. Being a multicultural fast reforming system, the UAE demands that the leaders will be able to steer through the global reforms without undermining the local cultures, languages, and traditions. Hojeij et al. (2024) note that professional development in the UAE has shifted towards technology-based solutions but continues to face issues related to implementation gaps and cultural obstacles. Programmes are not regularly integrated in school contexts, and they are not taken up evenly or have limited impact.

Concurrently, the transformative digital realm and the Fourth Industrial Revolution require the use of technology in leadership practice (Okunlola & Naicker, 2025). School leaders have to negotiate digital learning cultures, equity, and digital citizenship, and promote technology-based pedagogy (Ersoy & Penpece Demirel, 2026). According to Okunlola and Naicker (2025), digital leadership entails visionary planning, digital culture of learning, professional practice, systemic improvement and digital citizenship. However, the research paper observes that there is limited empirical research that examines the concept of digital leadership in schools; most studies are conceptual or anecdotal.

According to Al-Handhali et al. (2025) professional development programmes tend to be culturally responsive but lack cultural responsiveness to a pertinent extent. The review recommends context-specific and innovative programs to deal with socio-cultural issues and leadership requirements. Abuhassira et al. (2024) also introduce the fact that transformational leadership practice within the UAE secondary schools is mediated by teacher experience, which proves that leadership behaviour is context-dependent and cannot be wholesale imported into the other systems. These observations highlight the necessity of a study that will explore the impact of e-training on leadership preparedness in the unique socio-cultural and reform setting in the UAE.

Critical Synthesis of the Reviewed Literature

The above studies combined are more consistent in tone than in method. The UAE- and Gulf-based data, such as the Oman principals and the UAE professional-development scoping review (Al-Handhali et al., 2025; Hojeij et al., 2024), is mostly based on cross-sectional, self-report, designs with convenience or institution-specific sampling, positive relationships between interactive training and leadership outcomes can thus be attributed in part to common-method variance or self-selection by leaders, who were already more engaged, as opposed to a causal impact of training design. Some of the digital-leadership sources referenced are in turn themselves conceptual or based on the data of teacher perception as opposed to actual measurement of leader-readiness, and therefore the extent to which their arguments about visionary or digital leadership can be applied to the construct of readiness adopted here (Gao and Gao, 2024; Okunlola and Naicker, 2025). Another tension in the literature that is not entirely resolved by the review is that: some studies propose that the accessibility and convenience are important preconditions to engagement and others treat them as largely neutral in case a minimum threshold is reached the evidence reviewed does not provide a clear judgment on whether a threshold account or a genuinely null-effect account, and this

uncertainty is one of the gaps that this study is poised to fill because of empirical evidence, rather than assumptions (Chen and Yeh, 2025). Lastly, the majority of the interactivity and collaboration results described above are based on single-country or single-sector samples, and hence the seemingly established truth that interactive, collaborative e-training is more effective than accessible or well-designed e-training may be in part merely a result of which settings have been researched most and not necessarily an empirical regularity.

Research Gap

There are three gaps in the literature. First, although the topic of professional development in the UAE gains more and more focus, research seldom identifies leadership preparedness as a specific result. Majority of the research assesses the competence, satisfaction or digital skills, but there is a lack of research on the psychological preparedness which leads to behavioural change (Ersoy & Penpece Demirer, 2026). Second, digital leadership research focuses on conceptual models without empirical data on the effects of e-training dimensions on readiness (Okunlola & Naicker, 2025). According to Okunlola and Naicker (2025) indicators of digital leadership and the competencies needed to meet ISTE standards are under-studied. Third, the current studies tend to view e-training as a unidimensional intervention, disregarding its multidimensional nature. This requires a more discriminatory approach in the way certain e-trainings features affect the leadership preparedness in the UAE.

Hypothesis Development

Based on the literature, the main hypothesis is:

H1: E-training can positively and significantly influence leadership readiness of the UAE school leaders, and the effect is motivated by interactivity, active participation and collaboration rather than by accessibility and course design.

This hypothesis is based on a number of theoretical propositions. The theory of transformational leadership assumes that the intellectual stimulation and personalized attention assist leaders to develop self-efficacy and motivation (Khan et al., 2022). The constructivist learning theory argues that knowledge is co-constructed through social interaction and reflection. The literature review confirms that both theories are consistent with interactive and collaborative e-training to improve self-efficacy and reflective ability. In the meantime, the accessibility and quality of design enable participation but might not involve the higher-order cognitive and social processes required to prepare to be ready.

The secondary hypothesis is:

H2: There will be moderating contextual factors of the relationship between e-training and leadership preparedness, which include the past experience of the leaders, organizational support, and school culture.

This secondary hypothesis takes into consideration the socio-cultural complexity of the UAE and the fact that organizational conditions may have a role in the perception and implementation of professional learning by leaders. Available literature suggests that resilience, organizational support and thriving are related to leadership preparedness (Ersoy & Penpece Demirer, 2026). Through testing these hypotheses, future studies can not only clarify whether e-training has any impact on readiness but also in what conditions and how.

Method

Research Design

This paper assumed a quantitative, cross-sectional research design to investigate the level at which e-training forecasted leadership preparedness among school leaders in the UAE. This design was suitable as the study aimed to test theoretically defined relationships between latent constructs at a single time and not determine causality over time. Cross-sectional designs were popularly used in research on leadership and professional development since they were efficient in capturing trends in a dispersed population, but did not allow causal inference (Spector, 2019). Accordingly, the design was suitable for the explanatory nature of the article and also took into account inferential limitations. This design was also justified by the wider context of the UAE since professional development initiatives had grown at a rapid rate but the implementation was not even in institutions and emirates.

Population and Sampling

The population was made up of school heads in both public and private K-12 schools in the UAE. The stratified sampling strategy was utilized to enhance representativeness among emirates, school sectors and school levels. This analytically necessary decision was made since opportunities for leadership development were not uniformly distributed in the UAE, and the existing literature had indicated that the contextual factors influenced the accessibility of and perception of professional development in educators (Hojeij & ElSayary, 2026). Stratification minimized the chances of overrepresenting school leaders in the more researched contexts of Dubai and Abu Dhabi. The target sample of about 300-400 respondents was established since structural equation modeling needed a sufficiently powered sample to estimate both the measurement and structural models with reasonable accuracy.

Measures

Two main constructs were used in the questionnaire; they were: e-training and leadership readiness. The demographic items included the gender, years of experience of the participants, type of school, school level, and emirate. All the scale items were rated on a five-point Likert response scale, which ranged between strongly disagree and strongly agree. The tool was based on the latest literature on leadership, digital competence, and professional development and enhanced by a professional review to enhance applicability to the UAE school leadership context (Abdallah et al., 2025; Hojeij & ElSayary, 2026)

This instrument contained 32 Likert scale items altogether, five to seven items each on the e-training dimension (interactivity, active participation, collaboration, accessibility, content/design quality) and four to six items on the leadership-readiness dimension (preparedness, confidence, adaptability, readiness to lead), along with the demographic block. Objects were reworded based on the existing tools in the digital-leadership and professional-development literature and transformed into the school-leadership context. Content validity was determined by a review of 3 academic scholars in the field of educational leadership and psychometrics who rated the relevance, clarity and the fit of the items; items were revised or discarded in case the level of expert agreement was below an acceptable range. A small sample of school heads not part of the main study was then used to pilot the questionnaire, and some words were changed slightly to enhance clarity and also reduce ambiguity by those who do not

speak English as a native language before the instrument was translated into Arabic and backtranslated to ensure semantic equivalence. The internal consistency reliability of the retained subscales was acceptable to good with Cronbach alpha coefficients of between 0.78 and 0.91 across the nine sub-dimensions and component reliability coefficients selected in the later confirmatory factor analysis exceeded the 0.70 cut off point of all factors retained.

Table 1: Questionnaire Constructs and Measured Aspects

Construct	Measured aspects / dimensions	What was assessed
E-Training	Interactivity	The extent to which the training allowed dialogue, feedback, and two-way engagement.
	Active participation	The degree to which respondents actively took part in the training process rather than only receiving information.
	Collaboration	The extent of peer interaction, teamwork, and shared learning during training.
	Accessibility	How easy it was to access the training in terms of time, location, and flexibility.
	Content design	The clarity, organization, relevance, and instructional quality of the training materials.
Leadership Readiness	Preparedness	How ready respondents felt to assume leadership roles in reform-oriented settings.
	Confidence	Their self-belief in managing leadership responsibilities effectively.
	Adaptability	Their ability to adjust to change, new demands, and digital or pedagogical shifts.
	Readiness to lead	Their perceived ability to lead staff, respond to change, and support school improvement.

E-Training

E-training was operationalized as a multidimensional construct comprising interactivity, active participation, collaboration, accessibility, and content design. This conceptualization was a reflection of the shift in the literature of viewing digital training as a means of delivery and perceiving it as a developmental environment. Recent research had demonstrated that professional learning was effective when it promoted reflection, peer exchange, and authentic engagement as opposed to passive exposure to content (Al-Handhali et al., 2025). The e-training scale was, therefore, used to evaluate the level of dialogue, feedback, collaborative learning, flexible access, and coherent instructional design experienced by leaders. This multidimensional method was also more methodologically robust than a unidimensional measure, as it enabled the analysis to determine what aspects of e-training were the most relevant to readiness.

Leadership Readiness

The readiness to lead was assessed as the perceived preparedness, confidence, adaptability, and readiness of the leaders to implement leadership roles in transformative educational settings.

The construct was psychologically different from leadership competence in that readiness not only reflected the amount of knowledge held by leaders, but also whether they believed they could bring the knowledge to bear under the conditions of reform. This operationalization resonated with the evidence that indicated that resilience, organizational support, self-efficacy, and engagement influenced the ability of leaders to act (Ibrahim & Azzani, 2025). The scale consequently contained questions concerning the trust in the ability to lead the personnel, react to change, and lead the digital or pedagogical enhancement.

Data Collection Procedures

Primary data were collected using an online questionnaire that was sent to sampled school heads with institutional permission. The stratified probability sampling was used, so that the representation is done in terms of emirates (Abu Dhabi, Dubai, Sharjah, Ajman, Umm Al Quwain, Ras Al Khaimah, and Fujairah), school sector (public vs. private), and school level (primary, middle, secondary). School heads were chosen by random sampling within each stratum, and non-response was addressed by replacement from the same stratum. The sampling frame was built based on the school registry of the Ministry of Education. This procedure yielded 237 valid responses, somewhat below the a priori target of 300-400 respondents described earlier; the achieved sample was judged adequate for the structural equation model given the acceptable fit indices reported below, although the shortfall relative to the target does moderate the precision of the smaller dimension-level path estimates and is noted as a limitation.

The online mode was chosen due to the digital nature of the study, which was focused on, and the ability to effectively involve geographically dispersed leaders. The participants were informed by reading an information sheet and giving informed consent before filling the questionnaire. Reminder messages were made to enhance the response rate. This process was indicative of an increase in evidence indicating that digital platforms were now the center of education leadership, upskilling, and professional learning in the UAE (Hojeij & ElSayary, 2026).

Data Analysis Strategy

This analysis was done in 3 phases. To begin with, descriptive statistics were used to sum up respondent characteristics and item distributions. Second, the validity of construct, convergent, discriminant and internal consistency was evaluated using the confirmatory factor analysis. Third, the direct impact of e-training on leadership preparedness was tested using a structural equation modelling. SEM was chosen as it also estimated latent measurement properties and structural pathway and considered measurement error. This was particularly significant when considering that both of the focal constructs were theoretically complicated and multidimensional. The established indexes to assess model fit were Comparative Fit Index (CFI), Tucker Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR).

Ethical Considerations

The research conducted complied with ethical principles in educational studies. The participation was voluntary, and no school-identifying information was reported. Anonymity was ensured. It was made clear to the respondents that they could drop out at any point without

a penalty. These were especially significant safeguards since institutional research on leadership entailed professional sensitivities, power relations, and reputational risk. The ethical rigor thus enhanced the credibility of the results and the credibility of the responses of the participants (Ewen et al., 2023; Garces-Bacsal et al., 2022; Abbasi and David, 2021).

Results

Respondent Profile

Variable	Category	n	%
Questionnaires received	Valid responses	237	91.0
Questionnaires discarded	Incomplete responses	17	9.0
Gender	Female	189	79.7
Gender	Male	48	20.3

The completed questionnaires yielded a response rate of 91% and 237 valid responses (17 incomplete questionnaires were discarded to obtain the final dataset). This response rate enhanced the validity of the model since it minimized the chance that the results were just an outcome of occasional or extremely selective use of the survey instrument. The respondent population was also substantively pertinent to the objective of the study since it comprised of school heads who had already undergone e-training or a similar digital professional learning initiative, thus making sure that they were responding based on actual experience and not opinion.

Gender distribution was not balanced but provided information to analyze. There were 189 female respondents (79.7%), and 48 male respondents (20.3%). Instead of undermining the study, this pattern was a manifestation of the gendered nature of the school leadership involvement in the examined context and suggested that the results were particularly vulnerable to the experience of the female leaders that represent a significant percentage of the UAE educational workforce. Simultaneously, the imbalance should be taken into consideration since, possibly, there is an imbalance between gendered digital confidence, leadership self-perception, and training engagement potentially influencing the strength of identified associations.

The demographic structure was also used to distinguish the respondents in terms of school leadership experience and nature of school by cycle thus the methodological importance of the issue at hand since leadership preparedness is not psychologically neutral among career stages. Aspiration and uncertainty may motivate readiness among early-career school heads, and the accumulated judgment and familiarity with the role may motivate readiness among experienced leaders. This difference is important as the structural model was not merely testing to see whether e-training was effective, but rather whether it stimulated a readiness mechanism amidst

heterogeneous leadership profiles. The demographic design thus facilitated a more contextually sensitive description of the structural routes as opposed to a decontextualized approximation of average effects.

Descriptive Statistics

The descriptive statistics revealed a positive orientation about the measured constructs in general. Mean values across the questionnaire items were between 3.22 and 4.15 with standard deviations ranging between 0.79 and 1.43. This trend is analytical consequential. It indicates that the respondents did not oppose the e-training, leadership preparedness and leadership competence principle. They rather tended to be on the agreement side of the scale, albeit with sufficient dispersion to warrant inferential modelling. Hence, structural relations were a result of meaningful dispersion and not an artificially homogeneous pattern of response.

Descriptive indicator	Reported value	Interpretation
Mean range across items	3.22–4.15	Responses were generally positive
Standard deviation range across items	0.79–1.43	Moderate variation in responses
Lowest mean item	F2 = 3.22	Minimum agreement among the items
Higher dispersion items	D3 and D6	Greater heterogeneity in responses

Nevertheless, the descriptive profile also indicated that not all items were endorsed equally. The minimum agreement was pegged to item F2 ($M = 3.22$) though a number of other block items were around or even higher than the upper 3.8-3.9 limit. Substantively, this means that respondents distinguished between e-training and leadership process dimensions as opposed to making an acceptance of the survey around the world. The latter finding is in line with subsequent structural findings, which revealed that certain e-training dimensions played a role and the rest did not. Descriptive variation, thus, prefigured conceptual asymmetry in the model: school heads did not consider all the conditions of digital training to be developmental equally. That interpretation was further refined by the standard deviation pattern. Some of the measures, like D3 and D6, had a somewhat greater dispersion, which reflects more heterogeneous experience or judgment. This is important in the sense that it implies that not all aspects of e-training or preparedness are yet to be uniformly institutionalized in schools. That is, the findings of descriptive results already suggested that the digital leadership development environment in the UAE was not completely stabilized. There were cases of school heads developing with high value of development and others with lower or inconsistent support. This heterogeneity is consistent with broader research on the development of UAE professionals, which consistently shows gaps in implementation, a lack of fit with context, and disproportional adoption across institutions (Hojeij et al., 2024; Azaza et al., 2023; Alneyadi, 2022).

Measurement Model Assessment

The psychometric adequacy of the measurement model was acceptable. Two interactivity items (A4 and A5) were also eliminated due to poor loadings. It was not a technical change, but a theoretical change. It implied that all indicators that were initially expected to measure

interactivity did not work well in the school leadership environment in the UAE. The refinement thus enhanced clarity of the construct by only the indicators that reflected interactivity in a statistically consistent and substantially coherent manner.

Multicollinearity was not a concern. The tolerance was between 0.431 and 0.896 and VIF were between 1.116 and 2.320, which are all within acceptable limits. This was important since the five e-training dimensions were conceptually connected although not so intertwined that their impacts would not be differentiated. It was therefore unlikely that the subsequent observation that interactivity and collaboration had a significant role and accessibility and content/design did not was a statistical artifact due to redundancy of the predictors. The dimensions were separable enough empirically to be differentiated in their interpretation.

Adequacy was further supported with confirmatory factor analysis and structural fit indicators. In the dimension-level structural model, the fit indices were strong: $\chi^2/df = 1.654$, NFI = 0.92, RFI = 0.91, IFI = 0.93, TLI = 0.926, CFI = 0.93, RMSEA = 0.053, SRMR = 0.054. The values denote that the model was not only statistically admissible, but substantially plausible. The covariance pattern observed in the data was largely consistent with the estimated latent structure, which increased the belief in the validity of direct and indirect path estimates.

Structural Model Results

The findings at the collective level formed a sequence of coherent structures. The impact of e-training on leadership readiness ($\beta = 0.827$) and leadership competence ($\beta = 0.176$) were very positive and significant, although not so significant as the first. Leadership preparedness, in its turn, positively impacted leadership competence ($\beta = 0.672$). This rank is essential. It demonstrates that e-training developmental power was not depleted through a direct pathway. Rather, the greatest impact was through readiness, meaning digital training was essential when it influenced the preparedness of the leaders to implement what they had learned.

Table 2: Dimension-Level Effects of E-Training on Leadership Competence and Readiness

E-training dimension	Leadership competence (β, p)	Leadership readiness (β, p)
Interactivity	$\beta = 0.132$, $p = 0.040$	$\beta = 0.420$, $p < 0.001$
Active participation	$\beta = 0.035$, $p = 0.542$	$\beta = 0.293$, $p = 0.011$
Collaboration	$\beta = 0.069$, $p = 0.003$	$\beta = 0.122$, $p = 0.005$
Accessibility	$\beta = -0.057$, $p = 0.062$	$\beta = 0.028$, $p = 0.636$
Content/design quality	$\beta = -0.015$, $p = 0.449$	$\beta = 0.054$, $p = 0.148$

The trend was more discriminating at the dimension level. For leadership competence, interactivity ($\beta = 0.132$, $p = 0.040$) and collaboration ($\beta = 0.069$, $p = 0.003$) were significant positive predictors, while active participation ($\beta = 0.035$, $p = 0.542$), accessibility ($\beta = -0.057$, $p = 0.062$), and content/design quality ($\beta = -0.015$, $p = 0.449$) were not significant. This is a substantively important pattern. It implies that the competence of school leaders did not go up merely because digital training was present, accessible and well packaged. Instead, training enhanced competence as it established a mutual relationship and shared meaning-making.

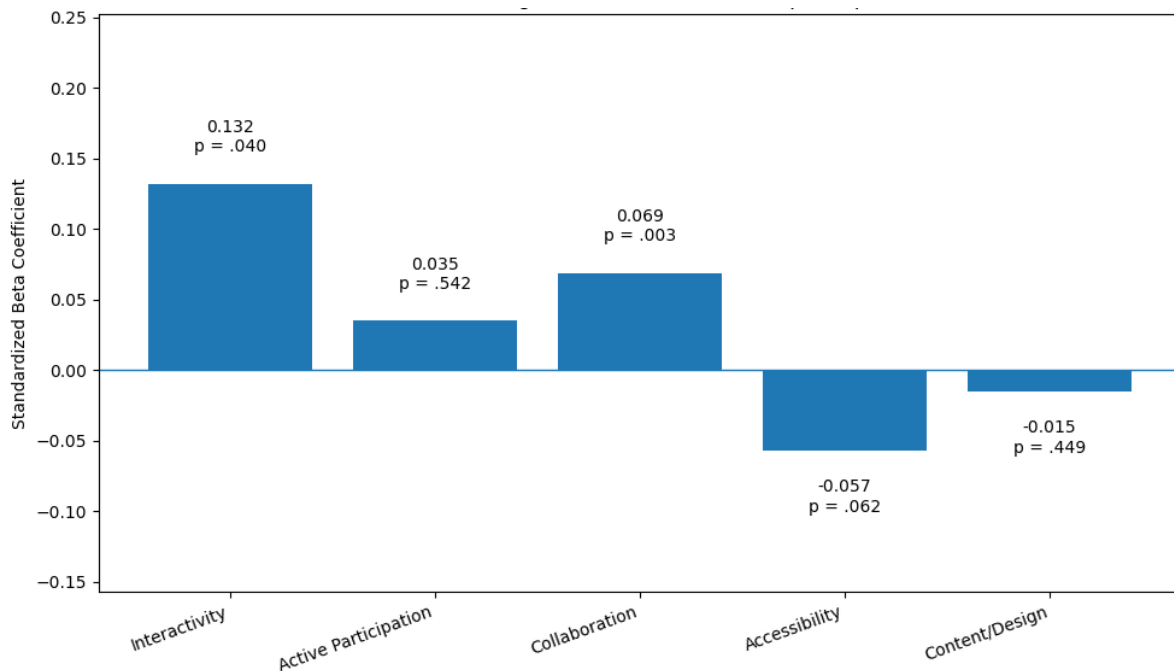


Figure 1: Effect of E-Training Dimensions on Leadership Competence

In Figure 2 below, the trend was similar, although somewhat wider in the case of leadership preparedness. Interactivity ($\beta = 0.420$, $p < 0.001$), active participation ($\beta = 0.293$, $p = 0.011$), and collaboration ($\beta = 0.122$, $p = 0.005$) were significant, whereas accessibility ($\beta = 0.028$, $p = 0.636$) and content/design quality ($\beta = 0.054$, $p = 0.148$) were not. Readiness was, therefore, more receptive than competence to participatory participation, but was not very sensitive to the convenience and packaging variables. Analytically, readiness seemed to be a motivational-cognitive threshold which was triggered by involvement and not usability only.

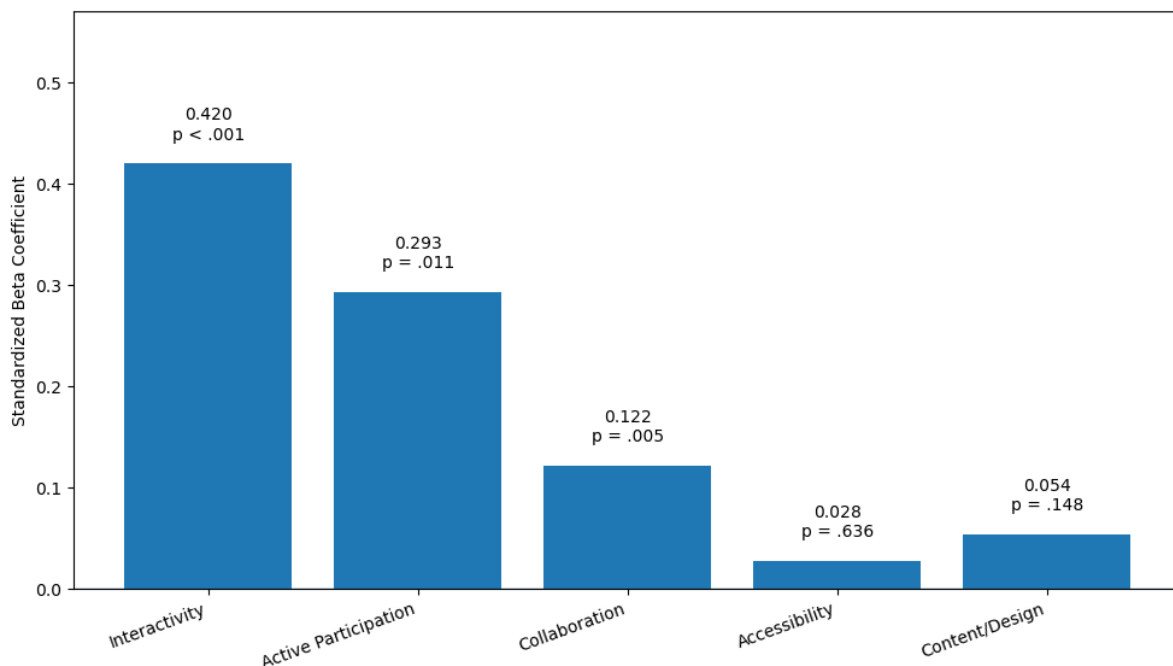


Figure 2: Effect of E-Training Dimensions on Leadership Readiness

Table 3: Direct Effects in Structural Model

Path	Reported coefficient	Significance
E-training → Leadership readiness	$\beta = 0.827$	Significant
E-training → Leadership competence	$\beta = 0.176$	Significant
Leadership readiness → Leadership competence	$\beta = 0.672$	Significant

Hypothesis Testing

Only partial support of the direct hypotheses was given. On the general level, H1, H2, and H3 were accepted: e-training was a good predictor of competence; e-training was a good predictor of readiness; readiness was a good predictor of competence. However, the hypotheses that were dimension-specific proved that there was a lot of internal differentiation hidden in the overall e-training effect. H1a and H1e were substantiated, and H1b, H1c, and H1d were not. Similarly, H2a, H2b, and H2e were supported and H2c and H2d were not. In this way, the general statement that e-training is important was supported, but not all of its design features induced that correlation.

Table 4: Mediation Results

Effect	β Reported value	95% CI	p-value	Interpretation
Overall e-training → competence via readiness	0.556	[0.430, 0.694]	0.004	Significant mediation
Interactivity → competence via readiness	0.289	Not reported	0.003	Partial mediation
Active participation → competence via readiness	0.202	Not reported	0.037	Full mediation
Collaboration → competence via readiness	0.084	Not reported	0.013	Significant indirect effect
Accessibility → competence via readiness	Not significant	—	—	No mediation
Content/design quality → competence via readiness	Not significant	—	—	No mediation

The outcomes of the mediation were more eye-opening. In general, the effect of e-training on leadership competence was mediated to some extent by leadership readiness, and this indirect effect was significant with a value of 0.556, 95% CI [0.430, 0.694], $p = 0.004$. This proves that readiness was not just associated with core variables, but it was the key process using which e-training was transformed into competence.

Selectivity in mediation occurred at the dimension level. Interactivity was partially mediated ($\beta = 0.289$, $p = 0.003$), as both the direct and indirect effects were significant. Full mediation ($\beta = 0.202$, $p = 0.037$) was observed for active participation: the direct effect on competence was not significant, but the indirect effect via readiness was. There was also a significant indirect effect of collaboration ($\beta = 0.084$, $p = 0.013$). In comparison, neither accessibility nor content/design quality showed significant mediation. This trend is also conceptually coherent:

certain digital training characteristics help leaders become competent only after they change their psychological readiness, whereas others do not even appear in the developmental chain.

Discussion

Implication of the E-Training on Leadership Readiness

The results reveal that e-training was not a neutral technological container. Its impact was based on the fact that it triggered the leader to be a reflective and socially active learner. The strongest predictor of readiness was found to be interactivity, which can be interpreted to mean that digital leadership development works when school heads are exposed to feedback loops, dialogue, and challenge-response sequences as opposed to non-interactive content. It is consistent with recent research indicating that digital leadership spaces can only be developmental when they facilitate critical thinking, communication, cooperation, and long-term support, rather than technological exposure (Abdallah et al., 2025; Gao & Gao, 2024).

More importantly, active partaking was a predictor of readiness but not competence per se. This difference is important in that it implies that participation alone did not necessarily result in a leadership ability. Instead, engagement equipped leaders to be competent through enhancing confidence, ownership, and perceived preparedness. In that regard, preparedness was acting like the conversion process. It aligns with the findings of the UAE and Gulf professional development studies that engagement-oriented training enhances confidence, self-efficacy, and willingness to implement the training prior to the manifestation of deeper competence in practice (Al-Handhali et al., 2025; Hojeij & ElSayary, 2026)

Accessibility and quality of the content/design lack significance, which is analytically provocative. That does not imply that these dimensions are insignificant. It translates to the fact that they were inadequate. Convenience can be both required to participate in digitally saturated environments, but it is not a distinguishing source of preparedness above a certain minimum threshold (Frehill, 2024). Similarly, Chen and Yeh (2025) argue that this is one of the reasons why numerous initiatives in the UAE to develop professionals, even when invested heavily by institutions, have a hard time producing deep leadership change: they can fix delivery issues but not developmental ones.

Alternative Explanations and Points of Tension

Before turning to the study's contributions, it is worth pausing on findings that do not simply confirm the hypothesized model and that admit more than one reading. First, the very large direct path from e-training to leadership readiness ($\beta = 0.827$) is unusually strong for a single latent predictor in organizational research and is larger than the equivalent path to competence ($\beta = 0.176$); this could indicate that readiness and e-training share method variance, since both were measured through the same self-report instrument at the same point in time, and an equally plausible reading is that leaders who already felt ready were also more inclined to rate their training favourably, rather than training straightforwardly producing readiness. Second, the negative, non-significant coefficients for accessibility on both competence ($\beta = -0.057$) and mediation pathways sit awkwardly next to a substantial literature that treats accessibility as a baseline enabler of participation; rather than concluding that accessibility is simply unimportant, an equally consistent interpretation is that accessibility in this sample had already reached a ceiling, so that its variance was too restricted to detect an effect, a possibility the

descriptive statistics cannot rule out. Third, the gender imbalance in the sample (79.7% female) makes it difficult to distinguish a genuine dimension-level effect of e-training from a gender-patterned response style; because gender was not modelled as a covariate or moderator in the structural analysis, the reported paths should be read as sample-specific associations rather than as evidence that would necessarily generalize to a more gender-balanced population of UAE school leaders. These tensions do not undermine the overall pattern of findings, but they qualify how strongly the results should be interpreted as evidence for a developmental, causal role of interactive e-training, as opposed to a cross-sectional association that a single-source, self-report design cannot fully disentangle from alternative explanations.

Theoretical Contributions

The research has three key theoretical contributions. First, it moves beyond a purely direct-effects explanation of e-training by showing that leadership preparedness is the key mediating variable through which digital professional growth affects competence. This further advance the field of leadership development by revealing that competence cannot be passed on as a result of exposure to training. It is psychologically put together by being prepared. Such conclusion enhances the explanatory rigor of both constructivist and humanistic views of learning, due to the fact that it demonstrates that leaders have to be cognitively and motivationally ready before they can transform digital learning into enacted competence.

Second, the results disaggregate e-training into the dimensions of substantive and demonstrate that digital professional development cannot be a one-dimensional phenomenon. Interactivity, participation, and collaboration worked in a different manner than accessibility and content/design. This directly responds to a limitation of the body of previous literature, where e-training has often been viewed as a single modality, as opposed to a collection of pedagogical conditions (Hojeij et al., 2024). The current research on digital transformation and digital leadership also holds the belief that the issue is not about digitization, but about the leadership and learning conditions within the technology environment.

Third, the research adds a UAE-based explanation of digital leadership development. Most of the digital training and leadership literature is generic or focused on higher education, educators, or non-Gulf organizational contexts. The research on school heads in the UAE demonstrates the role of readiness as particularly relevant in systems focused on reforms, where leaders are required to negotiate policy, culture, and institutional change at once. Competence in these situations cannot be separated in terms of readiness to perform in complexity.

UAE School Leadership Developments.

In the case of school leadership development in the UAE, the results suggest that digital reform cannot be evaluated based on access to platforms and the beauty of online resources. Those are infrastructure questions. The greater question is the fact that the digital environment leaves leaders in circumstances where they need to interpret, exchange, experiment, and solve problems together. The UAE leadership development policy has traditionally focused on standardization, alignment to reforms, and compliance; the current results, though, show that preparedness is a result of engagement and not solely of compliance (Abuhassira et al., 2024; Hojeij et al., 2024).

It also means that the development of leadership must be varied according to the stage of development. Preparedness may not be equal among new and long-term school heads due to the differences in skills alone, but also due to differences in confidence, role identity, and training relevance. The results of online training of principals in Oman also indicate that the role of professional experience is in the way leaders approach digital training and apply it to competence (Al-Handhali et al., 2025). Thus, the UAE leadership development must shift towards sequenced and stage-sensitive e-training architectures, as opposed to generic modules.

Practical Implications

In practice, the findings indicate that to redesign e-training, the UAE policy makers, school administrators and professional developmental providers ought to be guided by three principles. To begin with, interactivity must be regarded as a design requirement, rather than a luxury. Discussion boards, live problem-solving, peer critique, facilitator feedback and tasks that are based on scenarios are not just pedagogical frills; these are the most probable provokes to readiness.

Second, there should be institutionalized cooperation. The importance of teamwork in terms of preparedness and competence is a sign that school leadership is formed in a relationally way. Cross-school communities of practice, structured peer discussion, collaborative case analysis, and joint leadership inquiry should thus be considered as part of the digital professional development. This aligns with findings that reflective and collaborative digital resources such as leadership e-portfolios facilitate lifelong learning and self-discovery as well as genuine professional learning among educational leaders in the UAE (Hojeij & ElSayary, 2026).

Third, providers ought to develop readiness diagnostics into leadership development systems. Since only active involvement had an indirect impact on competence, institutions should not presume that visible involvement equates to developmental success. They ought to evaluate the confidence, readiness, adaptive readiness, and perceived capability of leaders to apply learning in school. This kind of diagnostics would enable ministries and providers to determine leaders who are attending but not yet psychologically oriented to be able to get maximum out of training.

Limitations and Directions for Future Research

The research has a number of limitations. First, it was founded on cross-sectional self-report data, and this implies that the model does not build a causal relationship over time but an association pattern. The theorization of readiness was that it is the mediator, and the pattern dramatically backs up this interpretation, but longitudinal evidence remains required to ascertain sequence. Second, the sample was gender-biased that could have influenced the estimates in the model in inconspicuous ways. Third, the existing findings were based on perceptual evaluation of competence, as opposed to external performance indicators, so the research reflected better the experienced developmental state of leaders, as compared to the practice outcomes independently verified.

There are at least four directions in which future research should go. Longitudinal research ought to examine the hypothesis of whether interactivity and collaboration can lead to long-term benefits in preparedness and whether such benefits subsequently translate into measurable leadership action and school transformations. Mixed-method research ought to be carried out

to find out why some leaders find e-training available and well designed to be developmentally weak. Multi-source studies are to be made up of leader self-ratings, teacher ratings, supervisor ratings, and school performance indicators. Lastly, moderated mediation models need to be tested in the future, looking at whether the pathway of readiness depends on experience level, type of school, emirate, or level of reform.

In general, the research indicates that it is not the question whether e-training is important or not. It does. The more profound question is why it is important. The empirical and theoretical answer is that e-training is consequential when it develops leadership preparedness, and that it is preparative when it is interactive, participatory and collaborative as opposed to being available and well-designed.

Conclusion

The purpose of this study was to investigate the impact of e-training on the leadership readiness and competence of the school leaders in the UAE. The results indicate that e-training is developmentally meaningful when it is not just a matter of access to information and content, but also one of participation, collaboration, and interaction. Interactivity was the key predictor for leadership readiness, and active participation and collaboration reinforced the readiness pathway through which digital training led to competence. However, access and content/design quality alone proved inadequate, suggesting that ease of access and good materials are not enough to create leadership, ready people. The study adds to the educational leadership literature by linking e-training to competence in the context of reform in the UAE school environment through the mechanism of leadership readiness. In terms of practice, the findings imply that ministries, schools, and training providers should develop digital leadership training programs based on feedback, peer learning, problem-solving based on scenarios, and readiness assessments. Longitudinal studies are warranted to determine if these readiness gains last over time and if the leadership practice continues in the futu

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