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Determinants Influencing Instructional Designers' Implementation of Multimedia Learning Principles: A Qualitative Study in a Law Enforcement Training Context

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ABSTRACT

Introduction: Multimedia Learning Principles (MLPs) provide a systematic way to boost learner understanding and engagement in digital learning settings. Although these principles are well-established in scholarly research, there's limited insight into how instructional designers (IDs) actually apply them in real-world professional training, particularly in fields like law enforcement.

Objectives: This research investigates the behavioral and situational factors that determine how instructional designers use MLPs at the Dubai Police Smart Training Centre. It aims to uncover what drives their design choices when creating multimedia-based e-learning in practical environments.

Methods: A qualitative, interpretivist research approach was used. Researchers carried out semi-structured interviews with twelve instructional designers working under contract with Dubai Police to build e-learning content. The data were examined using Braun and Clarke's six-step thematic analysis process, with guidance from the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2).

Results: Analysis revealed five major themes: lack of managerial support, confidence in making multimedia decisions, influence from peers within the design culture, personal motivation to create engaging learning experiences, and how valuable they perceive multimedia design to be. These aligned with UTAUT2 elements such as facilitating conditions, effort expectancy, social influence, performance expectancy, and a revised version of price value referred to as multimedia value.

Conclusions: The study reveals key motivational and organizational elements that impact how instructional designers approach multimedia creation in law enforcement training. These insights contribute to a broader understanding of instructional design practices in real-world, non-academic environments.

Keywords: instructional designers, multimedia learning principles, UTAUT2, qualitative research, e-learning, Dubai Police

INTRODUCTION

Instructional designers are central to the actual process and factors associated with the quality and effectiveness of e-learning in some of the most challenging occupational domains such as law enforcement, where there are direct effects on learner performance (Gokbel & Lipscomb-King, 2023). With the growing interest in digital training comes the desire for instructional designers to use research-based instructional models (Khalil & Elkhider, 2016). One well-known model is Mayer's Multimedia Learning Principles (MLPs), which draws on cognitive learning theories and has reliable empirical support (Mayer, 2024; Wolfe et al., 2023). MLPs are valuable to instructional designers as they provide a structured way to reduce cognitive load and enhance learner engagement through the effective delivery of text in conjunction with visuals. While there are well-documented uses of MLPs in academic contexts, it is unclear how

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frequently or successfully instructional designers in corporate or public safety training contexts employ MLPs especially in the UAE (Alzaabi et al., 2021; BinSubaih et al., 2009).

Most studies examine educational technologies using a conceptual framework, like the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2), from the perspective of learners or educators at educational institutions (Duan, 2024; Tan et al., 2023), with limited investigation of how these frameworks help explain the practice of instructional designers in settings where the success of training is often directly related to the effectiveness of the institution as a whole. In addition, while UTAUT2 has been found to predict behavior in some countries and organizational contexts (Al Fagih, 2022; Miah et al., 2023), there is still much to be understood when exploring variables within specific environments.

At the Dubai Police Smart Training Centre, external instructional designers produce e-learning content that reaches a balance between performance, scalability, and learner engagement. However, there is little empirical research that has investigated how these designers applied MLPs, or what elements facilitate design decisions. In summary, this study examines the situational and behavioral influences on instructional designers appropriation of multimedia learning strategies within law enforcement training and the unique organizational context.

OBJECTIVES

The successful implementation of Multimedia Learning Principles (MLPs) is influenced by a combination of theoretical understanding and the contextual, organizational, and individual circumstances that inform the practices of instructional designers. That said, while there is now widespread interest in multimedia-based learning and multimedia-enhanced training, our understanding of the underlying behavioral determinants that inform how designers operationalize MLPs in an e-learning courseware development context is lacking, especially in the area of law enforcement training.

To this end, the purpose of the study is to explore and interpret the significant determinants that affect the implementation of MLPs by instructional designers contracted to work at the Dubai Police Smart Training Centre. The investigation is framed by the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) to identify specific constructs that inform or inhibit designers' use of multimedia instructional strategies (e.g., performance expectancy, effort expectancy, social influence, facilitating conditions, price value). While the objective of the study is not to measure general technology acceptance, it is to illuminate how these factors operate in practical scenarios of instructional design practice within a high-performance, security-focused organizational context.

METHODS

This research study was developed utilizing a qualitative exploratory design using an interpretivist paradigm of research. This study was initiated to investigate the influences and factors that shape the instructional designers' adoption and implementation of a multimedia learning principle (MLPs) in law enforcement training. Data collection for this study consisted of semi-structured interviews with twelve instructional designers contracted by the Dubai Police Smart Training Centre. The data collection and data analysis were guided by two theoretical lenses, the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2), and the Cognitive Theory of Multimedia Learning (CTML). In addition, the transcripts were systematically interpreted through Braun and Clarke's six-phase thematic analysis procedure guided by constructs within the UTAUT2 model. NVivo 15 software was utilized for the coding process. Our codebook was structured deductively around the core constructs on the UTAUT2 model, but we also permitted further inductive insights from participants.

UTAUT2 AS A QUALITATIVE ANALYTICAL FRAMEWORK

Originally developed in the quantitative paradigm for acceptance and use of technology (UTAUT2), increasing applicability in qualitative research is being developed with a view to understanding behavioral intention and technology adoption in complex, context-driven environments. The scholarly debate is now settled, with a reasonable claim regarding the conceptual flexibility of the model and its emerging role as a thematic framework for qualitative inquiry. Williams et al. (2015) identified UTAUT2 as a reasonable epistemological strategy relative to research contexts and methods, indicating value as a framework for exploratory analysis. Duman (2024) provides additional support for the evolving role of UTAUT2 when it examined faculty perceptions of online tools, while Ciftci et al. (2023) implemented UTAUT2 in a research design that leveraged qualitative and quantitative methods to report on

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distance learning platform environments. In this study, UTAUT2 constructs (performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and the adapted value of multimedia) were employed as active themes and not fixed variables from a questionnaire. This presented opportunities for deep inquiry about instructional designers and their decisions about the implementation of the multimedia learning principles (MLPs) in the Dubai Police Smart Training Centre, while being anchored in an established framework. This ensured that the research remained theoretically anchored in UTAUT2 while being flexible and responsive to the changing context and emergent insights, which supports UTAUT2's value in interpretive research.

RECONCEPTUALIZING PRICE VALUE IN INSTRUCTIONAL DESIGN CONTEXTS

In the original UTAUT2 framework (Venkatesh et al., 2012), Price Value refers to the cost–benefit assessments from users' perspectives when accepting a technology. However, it seems that in a professional context where users, such as instructional designers, do not pay for the financial cost, this construct may have little contextual value. For example, Ain et al. (2016) had removed Price Value in their examination of LMS use when students did not incur costs directly.

The current study was able to offset this limitation and stay true to the UTAUT2 framework by adapting Price Value into how we understand Multimedia Value (MV). This revised construct represents how instructional designers evaluate the usefulness and instructional value of using Multimedia Learning Principles (MLPs) in the face of perceived demands such as workload, integration complexity, and recognition. The construct provides the same general notion of a value assessment blazed into UTAUT2, but allows the constructs to better reflect the professional and task-centered realities of multimedia-based course design in organizational contexts, without the monetary cost becoming a statistical veneer.

PARTICIPANT SELECTION AND SAMPLING

A sample of twelve instructional designers was obtained using purposive sampling from the population of designers creating multimedia-based e-learning materials for the Dubai Police. Participants were selected from two instructional design companies contracted to design learning materials for the Dubai Police, which are identified as Organization A and Organization B. Internal staff and external freelance designers were included to provide a range of perspectives based on experience and organizational affiliation.

Table 1. Demographic Profile of Interviewed Instructional Designers

Participant ID	Gender	Organization	Years of Experience	Role Description
ID1	Male	A	6 years	E-learning Developer
ID2	Female	A	8 years	Instructional Designer
ID3	Male	A	4 years	Multimedia Specialist
ID4	Female	A	5 years	Courseware Developer
ID5	Male	A	10 years	Senior ID / Content Strategist
ID6	Female	B	7 years	Instructional Designer
ID7	Male	B	3 years	E-learning Content Creator
ID8	Female	B	5 years	Course Designer
ID9	Male	B	4 years	Instructional Media Developer
ID10	Male	A	6 years	Instructional Technologist
ID11	Female	B	8 years	Senior Instructional Designer
ID12	Male	A	9 years	Multimedia Design Lead

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INTERVIEW PROTOCOL AND THEORETICAL MAPPING

A sample of twelve instructional designers was obtained using purposive sampling from the population of designers creating multimedia-based e-learning materials for the Dubai Police. Participants were selected from two instructional design companies contracted to design learning materials for the Dubai Police, which are identified as Organization A and Organization B. The designers from both organizations were included to provide a range of perspectives based on experience and organizational affiliation.

Table 2. Mapping of Interview Questions to UTAUT2 Determinants

UTAUT2 Determinant	**Interview Questions**	**Implications of the determinant in the context of the study**
Performance Expectancy (PE)	- To what degree do you think using multimedia learning principles will help improve your job performance? - How do MLPs affect the quality or effectiveness of the courses you design? - Can you share an example where applying or not applying MLPs affected learner outcomes?	The degree to which using multimedia learning principles will help you improve your job performance.
Effort Expectancy (EE)	- How easy or challenging do you find it to integrate MLPs into your course designs? - What factors make it easier or harder for you to apply these principles?	The ease associated with the use of multimedia learning principles.
Social Influence (SI)	- How do your colleagues, supervisors, or the organizational culture influence your decision to apply MLPs? - Are there any expectations from stakeholders regarding the use of multimedia elements?	The degree to which others (colleagues, managers, organizational culture) influence your use of multimedia principles
Facilitating Conditions (FC)	- Do you feel you have access to the necessary tools, technologies, and training to effectively apply MLPs? - What kind of support (technical, managerial, or training) would help you implement MLPs more effectively?	The resources and support available to help you implement multimedia principles.
Hedonic Motivation (HM)	- Do you find designing with MLPs enjoyable or creatively fulfilling? Why or why not? - How does your level of enjoyment influence how often you apply these principles?	The enjoyment or satisfaction derived from using multimedia principles.

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Multimedia Value (MV)	- Considering the time and effort required, do you believe applying MLPs adds significant value to your e-courses? - Have you ever felt that the effort needed to apply these principles wasn't worth the outcomes? Why?	The perceived value of using multimedia learning principles relative to the effort and resources required.
Habit (HT)	- Would you say that applying MLPs has become a routine part of your instructional design process? Why or why not? - Can you recall how your habits regarding multimedia use have evolved over time?	The extent to which the use of multimedia learning principles has become a routine part of your design process.

RESULTS

The thematic analysis of the semi-structured interviews with twelve instructional designers resulted in five main factors influencing the application of Multimedia Learning Principles (MLPs) at the Dubai Police Smart Training Centre. The factors were developed based on deductive coding based on the UTAUT2 model; the factors were also inductively refined to ensure contextual fit. A summary of the final determinants shown, a brief description of each determinant, and their theoretical mapping to the UTAUT2 constructs is provided in table 3.

Table 3. Final Determinants from Interview Data and Corresponding UTAUT2 Constructs

Determinant	**UTAUT2 Construct**	**Description**
Managerial Support	Facilitating Conditions	Perceived organizational backing and supervisory engagement in applying MLPs.
Design Confidence	Effort Expectancy	Instructional designers' belief in their own ability to effectively design using MLPs.
Peer Learning and Collaboration	Social Influence	The role of community learning, sharing practices, and informal mentorship.
Resource Optimisation	Facilitating Conditions	Accessibility of multimedia tools, time, and technical infrastructure.
Perceived Multimedia Value	Performance Expectancy & Multimedia Value (adapted from Price Value)	How relevant and useful IDs believe MLPs are for their specific learner group and their expectations of performance.

the thematic coding process was completed in NVivo 15. All interview transcripts were manually coded in the software using a structured codebook from the concepts of the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2). NVivo's hierarchical coding chart provided a unique mapping of the 242 initial codes across five final themes, as presented in Figure 1, allowed for the further development and organization of the themes.

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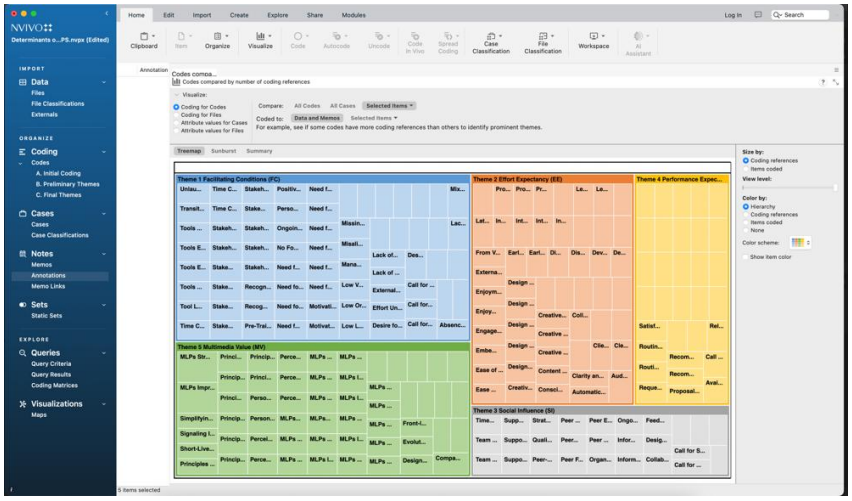

Figure 1. The determinants of instructional deigners' use of Multimedia Learning Principles.

In the interviews, managerial support emerged as a major factor in the level of actual application of MLPs being used by instructional designers. Some of the participants spoke to the challenges they experienced with a lack of formal checkpoint, lack of reviewing systems, and lack of manager involvement, with all expressing these factors made it challenging to apply MLPs consistently. ID3 summed this up well when he described manager absence, "Honestly, if the manager hasn't pushed for this, or doesn't even know they should be using multimedia principles - then there is little chance the team will follow through... we would just do whatever was the bare minimum." Other participants, including ID6, had been fortunate in their experience with supervisory engagement, "What made it easier for me to use these principles was actually my manager... was the one who keep pushing to use effective theories in instructional desiegn, and said we suppose to reflect these theories, and use them in our designs." These comments made clear associations to the UTAUT2 construct Facilitating Conditions, which highlight the importance of systemic, leadership and institutional support.

A second factor found, design confidence, revealed that many instructional designers lacked confidence in using MLPs. Many times lack of confidence was also reported as being a result of not having formal multimedia training and/or not being directed with clear guidelines. ID4 addressed this when she said, "Sometimes, even though I know what a multimedia learning principle is, I just don't know how to actually use it in the right way.... I keep second guessing myself." Along similar lines, ID1 described it, "It took me a few projects to actually feel like I knew what I was doing with things like segmentation or spatial contiguity." These references provide a connection to Effort Expectancy, in that the perceived ease or difficulty of implementing design strategies is an impact of continued use.

Collaboration and peer learning were very common themes in the interviews, especially in organizations with limited amount of formal training or structured guideline processes. Designers often learned from or collaborated with colleagues to make decisions about multimedia design. ID7 referenced collaboration, "We share a lot of templates, and ideas in our internal group... sometimes you just learn by looking at how your team mate structured a scene." ID2 made a similar statement when he pointed out, "When I got stuck on how to apply signaling, I asked my co-worker, and he showed me how he uses it - that was a huge help." These experiences bring to light the many dimensions of social influence, as an important influence in shaping the design behaviours of instructional designers.

Resource optimization was another important facet, although noted only slightly less often than the previous categories. Several participants described how resource constraints (e.g. time, tools or technical infrastructure) impacted design decisions. As ID5 explained, "It's not that I don't want to apply all of the principles... it's just that sometimes I don't have the right program, or time." ID2 added, "we're sometimes asked to to finish a course in [such a] short window of time, this makes it hard to apply everything in the right way." These examples could be associates with Facilitating Conditions, particularly when a tool is disrupted because of unavailable resources.

Finally, the perceived relevance of MLPs also influenced design decisions, especially when designers believed some of the principles did not fit the context or audience. ID6 said, "Some of the principles, like redundancy or

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personalization, I feel don't always fit when designing for police officers… It's not school." Similarly, ID1 said, "I always apply signalling and coherence, those are essential. But not every principle makes sense for every type of content." This determinant demonstrates Performance Expectancy, as it shows how perceived usefulness determines which principles are prioritised.

When combined, these five determinants provide a rich description of the determinants that impact instructional designers' use of MLPs in authentic professional training contexts. Results also confirmed that UTAUT2 is useful in this context, and that contextual, organisational, and personal factors matter in the design of multimedia instruction. Figure 2 below illustrates the determinants of instructional deigners' use of Multimedia Learning Principles.

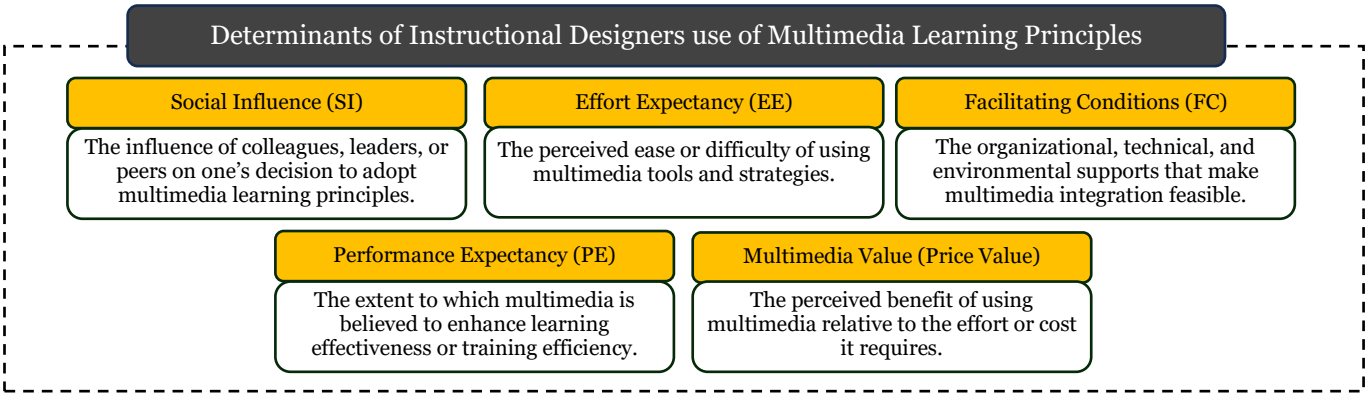

Figure 2. The determinants of instructional deigners' use of Multimedia Learning Principles.

DISCUSSION

These results provide a clear understanding of the determinants that influence instructional designers' use of Multimedia Learning Principles (MLPs) in a law enforcement training setting. Using the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) model to frame this study, five key factors were identified that influence instructional design behaviour at the Dubai Police Smart Training Centre: Facilitating Conditions (Managerial Support/Resource Optimisation), Effort Expectancy (Design Confidence), Social Influence (Peer Learning and Collaboration), and Price Value (Multimedia Value)/Performance Expectancy (Perceived Relevance of MLPs). These determinants combine both the hypothetical frameworks of UTAUT2 and the situated practices associated with professional e-course design work in an atypical educational context. Although Hedonic Motivation and Habit were included in the interview guide and UTAUT2 framework, no consistent or distinct patterns emerged during analysis that would justify their inclusion as standalone determinants. As such, they were excluded from the final results.

The strongest factor, Managerial Support, comports with the UTAUT2 model of Facilitating Conditions. Instructional designers' use of MLPs was heavily influenced as to whether they received advice/clarity, supervisory feedback, or formal organizational provisions. This finding is consistent with the views of Sorgenfrei & Smolnik (2016) who noted that the success of an educational innovation often relates to institutional support. In their case, the variance in applying MLPs and reluctance to be more prescriptive was driven by informal protocols or MLPS agreed upon by the workgroup, rather than formal evaluation processes or standard designs.

The second factor, Design Confidence, relates to Effort Expectancy. Design confidence speaks to how uncertainty and perceived complexity influences the limited willingness of the designers to either engage in experimentation with MLPs or consistently apply them while producing an e-learning course. This aspect has been highlighted in previous research by Lubin & Reio (2023) and Khalil & Elkhider (2016), who reported that many instructional designers are essentially multimedia design novices as they have no formal multimedia design training and rely on hesitation and self-doubt or acceptance of copy and paste or previous rounds of orders, as habitual constraints to their instructional work. The

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designers had some awareness of principles such as coherence and signaling, however it was dependent on the clearer than others project, or perception of relative emphasis of the MLPs based on context.

Peer Learning and Collaboration provide a key account of how procedural knowledge was internalized and they serve to illustrate how the principles could be applied across contexts of application. The designers acknowledged that less confident designers were able to orient themselves towards what other designers relied on, or deemed as informal standards through narrative accounts, (or informal sharing of knowledge strategies), within their organizations, but then even poach when designers were recognised as older within the profession. This finding resonates with Yamani (2021) who described the impact of collaborative learning and design based environments for instructional design teams, in relation to the quality of professional practice in the organizational context.

Resource Optimisation had some limited relationship to Facilitating Conditions and was influenced by filing habits based on a workflow bearing. However, participants described the influences of time, the absence of technical tools they previously relied on, and of formal expectations to 'keep things moving' often barrier or limited ways to be more mindful in applications of the MLPs.

Perceived Relevance of MLPs pertains to both Performance Expectancy and Multimedia Value (adapted from Price Value). This determinant captures the perspective of instructional designer's assessments of the contextual utility of individual principles, particularly in high-performance contexts, such as law enforcement, and if principles such as signalling, coherence, segmenting, etc., are seen as overall essential, and principles like personalization and redundancy are simply not fitting. Thus, it can be understood that the application of MLPs are situational and value-based.

Collectively, these findings reinforce the suitability of UTAUT2 in explaining the behavioral determinants shaping multimedia design implementation in professional training settings. Moreover, the results suggest that while theoretical alignment is essential, practical adoption requires models that account for managerial support, designer readiness, peer networks, and contextual relevance. These insights contribute to a growing recognition of the complexities instructional designers face when translating evidence-based principles into applied design choices—especially in high-stakes, performance-driven environments such as law enforcement.

CONCLUSION

This investigation has examined the influences that lead to instructional designers' purposeful adoption of Multimedia Learning Principles (MLPs) at the Dubai Police Smart Training Centre. Using a qualitative approach, semi-structured interviews were conducted using the UTAUT2 framework All the determinants relate to a UTAUT2 construct and provide a theoretical context for exploring instructional design practice and behaviours in technology-enabled learning situations.

The findings present a rationale for exploring organizational structures, culture, and operational resources to develop consistency in effective application of multimedia learning principles in the design and delivery of learning. In addition, the work also reinforces the fact that instructional designers' behaviours and decision-making are not just informed by the theoretical application of MLPs, but are also directly impacted by institutional politics, norms of behaviours and moving their decision-making processes forward with a confidence that occurs in time-limited, resource constrained contexts. The results of this study enhance the limited body of work that has considered instructional design practice in non-traditional learning contexts, specifically law enforcement training.

This study focused on the behavioural, structural, and perceptual aspects of designers' adoption of MLPs as a reasonable preliminary step to provide evidence which can inform further interventions and training, or support the development of different structures that may enhance the instructional effectiveness of multimedia-based e-learning. Future research could build upon this study by incorporating the perspectives of the students or evaluate the actual courseware or learning outcomes.

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REFRENCES

[1] Ain, N. U., Kaur, K., & Waheed, M. (2016). The influence of learning value on learning management system use: An extension of UTAUT2. Information Development, 32(5), 1306–1321. https://doi.org/10.1177/0266666915597546
[2] Al Fagih, K. (2022). INVESTIGATING THE ADOPTION OF AN INNOVATION USING AN EXTENDED UTAUT MODEL: THE CASE OF MOBILE LEARNING TECHNOLOGY. Journal of Theoretical and Applied Information Technology, 100.
[3] Alzaabi, A., Ghani, A., & Siam, M. R. (2021). The effect of e-learning training program on organizational performance through underlying mechanisms of capacity building of Dubai police force. Academia.Edu. https://www.academia.edu/download/78930776/the-effect-of-elearning-training-program-on-organizational-performance-through-underlying-mechanisms-of-capacity-buildin.pdf
[4] BinSubaih, A., Maddock, S., & Romano, D. M. (2009). Serious Games for Police: Opportunitied and Challenges. Citeseer.
[5] Ciftci, S. K., Gok, R., & Karadag, E. (2023). Acceptance and use of the distance education systems of Turkish medical educators during COVID-19 pandemic: an analysis of contextual factors with the UTAUT2. BMC Medical Education, 23(1), 1–12.
[6] Duan, C. (2024). Advancing open education through open-source software: examining UTAUT 2 factors in adoption and implementation. Asian Association of Open Universities Journal. https://www.emerald.com/insight/content/doi/10.1108/AAOUJ-09-2024-0119/full/pdf
[7] Duman, B. (2024). Academicans' Perceptions Towards Online Teaching Tools Within the Context of the Uni ed Theory of Acceptance and Use of Technology-2 (UTAUT-2). Pegem Journal of Education and Instruction, 14(1), 150–166.
[8] Gokbel, E. N., & Lipscomb-King, N. P. (2023). Instructional designers' roles in the post-COVID-19 pandemic era. In Global Perspectives on Higher Education: From Crisis to Opportunity (pp. 423–434). Springer.
[9] Khalil, M. K., & Elkhider, I. A. (2016). Applying learning theories and instructional design models for effective instruction. Advances in Physiology Education, 40(2), 147–156.
[10] Lubin, L., & Reio, T. (2023). From the Standpoint of Instructional Designers: Critically Investigating the Coordination of ID Contributions to Collaborative Online Course Development. New Horizons in Adult Education and Human Resource Development, 35, 117–140. https://doi.org/10.1177/19394225231202308
[11] Mayer, R. E. (2024). The past, present, and future of the cognitive theory of multimedia learning. Educational Psychology Review, 36(1). https://link.springer.com/content/pdf/10.1007/s10648-023-09842-1.pdf
[12] Miah, M. S., Singh, J. S. K., & Rahman, M. A. (2023). Factors Influencing Technology Adoption in Online Learning among Private University Students in Bangladesh Post COVID-19 Pandemic. Sustainability, 15(4), 3543.
[13] Sorgenfrei, C., & Smolnik, S. (2016). The Effectiveness of ELearning Systems: A Review of the Empirical Literature on Learner Control. Decision Sciences Journal of Innovative Education, 14(2), 154–184.
[14] Tan, C., Alhammad, M. M., & Long, S. H. (2023). Applying the UTAUT2 model to determine factors impacting the adoption of Microsoft Teams as an online collaborative learning tool. International Journal of Smart Technology and Learning. https://discovery.ucl.ac.uk/id/eprint/10186530/1/2024_IJSMARTTL-157205_ATFPV.pdf
[15] Venkatesh, Thong, & Xu. (2012). Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology. MIS Quarterly, 36(1), 157.
[16] Williams, M. D., Rana, N. P., & Dwivedi, Y. K. (2015). The unified theory of acceptance and use of technology (UTAUT): a literature review. Journal of Enterprise Information Management, 28(3), 443–488.
[17] Wolfe, J., Shanmugaraj, N., Reineke, J., Caton Peet, L., & Moreau, C. P. (2023). Advancing the Knowledge Base on Effective Presentation Slide Design: Three Pilot Studies. Journal of Technical Writing and Communication.
[18] Yamani, H. A. (2021). A conceptual framework for integrating gamification in elearning systems based on instructional design model. International Journal of Emerging Technologies in Learning (Online), 16(4), 14.