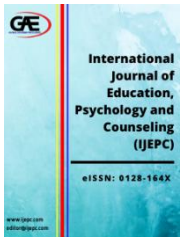
International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 1006-1027



INTERNATIONAL JOURNAL OF EDUCATION, PSYCHOLOGY AND COUNSELLING (IJEPC)
https://gaexcellence.com/ijepc

THE EFFECTIVENESS OF DIGITAL MEDIA TYPES ON LEARNING MOTIVATION AMONG UNIVERSITY STUDENTS: A SYSTEMATIC LITERATURE REVIEW

Aisyah Arina Mohammad Shahrazel[1]*, Hafiz Zaini[2]

[1]Faculty of Education, Universiti Kebangsaan Malaysia (UKM), 43600 Bangi, Selangor, Malaysia
p166003@siswa.ukm.edu.my https://orcid.org/0009-0002-7741-1134
[2]Faculty of Education, Universiti Kebangsaan Malaysia (UKM), 43600 Bangi, Selangor, Malaysia
mhz@ukm.edu.my https://orcid.org/0000-0001-5520-915X
*Corresponding Author

Article Info:

Article history:
Received date: 18.05.2026
Revised date: 07.06.2026
Accepted date: 23.06.2026
Published date: 30.06.2026

To cite this document:

Shahrazel, A. A. M., & Zaini, H. (2026). The Effectiveness of Digital Media Types on Learning Motivation Among University Students: A Systematic Literature Review. *International Journal of Education, Psychology and Counselling, 11*(63), 1006-1027.

Abstract:

This study is a systematic review of the literature on the types of digital media that most effectively increase university students' motivation during the learning process in an asynchronous learning model. Based on the PRISMA 2020 guidelines, a total of 30 empirical articles retrieved from Scopus, Web of Science, ERIC, and Google Scholar underwent thematic synthesis between 2019 and 2025. Results show that interactive multimedia tools, such as H5P-based content and augmented reality applications, in combination with digital games and simulations, were well aligned with the three basic psychological needs of Self-Determination Theory (SDT): autonomy, competence, and relatedness. Short instructional videos also showed significant motivational effects, especially if they had an apparent teaching presence and interactive components. In contrast, static document formats (PDFs) had the lowest motivational influence across all SDT dimensions. A total of six moderating variables were found, which are students' digital competence, the quality of the instructional design, instructor facilitation, digital infrastructure, individual learning preferences, and the length of exposure to media. These are all of which have the potential to increase or decrease the motivational effects of a medium. The review, based on an integrative TAM–SDT theoretical framework, suggests a hierarchical model of digital media use in higher education in the context of an asynchronous learning environment, especially in the case of the public universities in Malaysia. Instructional designers, academics, and institutional policy makers are discussed in terms of implications.

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 1006-1027
DOI: 10.35631/IJEPC.1163061 **Keywords:**

Asynchronous Learning, Digital Media Effectiveness, Higher Education Malaysia, Instructional Video, Interactive Multimedia, Learning Motivation, Self-Determination Theory

Introduction

The COVID-19 pandemic has brought about a significant shift in knowledge delivery at public universities in Malaysia. Nowadays, platforms such as Google Classroom, Microsoft Teams, and institutional Learning Management Systems (LMS) have become the backbone of everyday academic life, supported by an expanding array of multimedia tools, including lecture recordings, interactive e-modules, podcasts, and digital assessments (Kamal et al., 2020). However, which of the many media formats used in asynchronous learning truly sustain and enhance students' motivation to learn?

This is a particularly critical question for Malaysian institutions, which have already made significant investments in digital platforms and content infrastructure. New evidence indicates that media formats differ in their capacity to support the three psychological needs of autonomy, competence, and relatedness as defined by Self-Determination Theory (SDT) (Deci & Ryan, 1985), and that only selected formats consistently produce intrinsic motivation linked to deep and lasting learning (Staneviciene & Zekiene, 2025; Nurhayati et al., 2024; Prasetya et al., 2025). This view of technology acceptance is supported by the Technology Acceptance Model (TAM) (Davis, 1989), which provides the understanding of a student's initial attitude towards a particular medium, given their perceptions of its usefulness and ease of use.

Building on these complementary theoretical perspectives, this systematic literature review (SLR) is conducted using an integrative TAM–SDT conceptual framework (Figure 1) that positions digital media type as a contextual moderator between technology acceptance and motivational quality. Inquiry questions are the following:

1. What types of digital media are the most effective in raising learning motivation in the asynchronous learning setting of university students?
2. What are the varied ways that media formats can meet the SDT needs for autonomy, competence, and relatedness?
3. What motivational design features are consistently associated with intrinsic motivation?
4. What are the contextual factors that moderate these relationships, especially in the context of higher education in Malaysia?

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 1006-1027

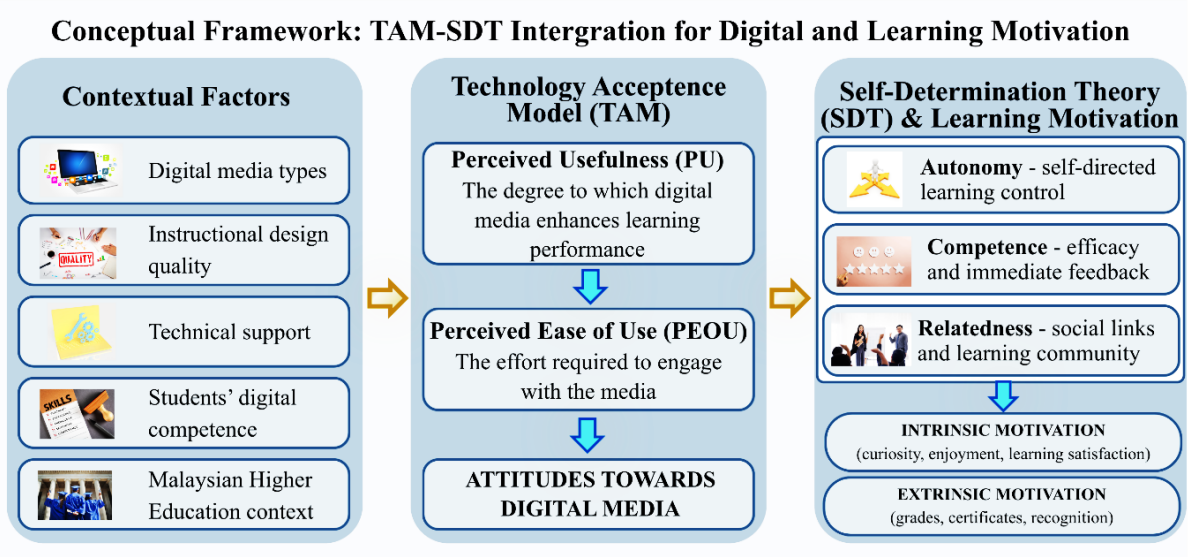


Figure 1: Conceptual Framework of TAM–SDT Integration
Source: Adapted from Davis (1989) and Deci & Ryan (1985).

Literature Review

Technology Acceptance Model (TAM) and Digital Media Attitudes

Davis' (1989) TAM is one of the most comprehensive models to explain the process of technology adoption in educational contexts. The two constructs of the system, namely Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), have consistently been found to correlate with students' motivation and behavioural engagement across various digital systems (Kemp et al., 2024; Sukendro et al., 2020). What has happened over the past few years is that other factors have been added to these models, such as social influence and facilitating conditions in the Extended models (TAM2, TAM3, UTAUT), which have expanded the scope of explanation in the current use of digital learning. In particular, the combination of TAM and motivational theory revealed that the relationship between media design features and intrinsic motivation was mediated by PU and PEOU (Fathali & Okada, 2018; Roca & Gagné, 2008), which is one of the key points of interest in the current review.

Self-Determination Theory (SDT) and Learning Motivation
SDT (Deci & Ryan, 1985, 2000) distinguishes between autonomous motivation, driven by genuine interest and personal values, and controlled motivation, sustained by external incentives. Sustained engagement depends on satisfying three psychological needs, which are autonomy (self-directed choice), competence (efficacious mastery with responsive feedback), and relatedness (social connection within the learning community). Each need presents distinct design challenges in asynchronous contexts. Autonomy requires meaningful learner choice, the competence hinges on timely, substantive feedback, and the relatedness, arguably the most difficult to address asynchronously, demands structured social interaction (Salikhova et al., 2020; Chiu, 2021). How well different digital media address these needs forms the analytical core of this review.

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 1006-1027

The Malaysian Higher Education Context

Research on digital media motivation in public universities in Malaysia remains relatively limited. Previous research has reported attitudinal changes after the pandemic, with the changes being slight and dependent on the quality of pedagogical support and technical infrastructure (Ismail et al., 2020; Kamal et al., 2020). Global findings may be difficult to directly apply because of unique contextual variables such as the urban–rural digital divide, multiethnic and multilingual populations, collectivist cultural values that make relatedness more important, and regional variability in infrastructure (Chin et al., 2024). This review fills this gap by synthesizing methodologically sound and contextually relevant evidence that is directly pertinent to future empirical studies in Malaysian public universities.

Methodology

Study Design

This research is conducted using a Systematic Literature Review (SLR) methodology based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses 2020 (PRISMA 2020) framework (Page et al., 2021). A structured, transparent, and reproducible approach to identifying, appraising, and synthesizing evidence attributes is especially relevant in a methodologically heterogeneous discipline like educational technology and a cornerstone of the PRISMA 2020 guidelines.

Search Strategy and Databases

The electronic search was carried out systematically in the four main academic databases, namely Scopus, Web of Science (WoS), ERIC, and Google Scholar, in April and May 2025. The search window is from 2019 to 2025, to reflect the modern era in which digital learning is taking its place, while no date was specified for the theoretical works of Davis (1989) and Deci & Ryan (1985). Table 1 explains the use of Boolean search strings.

Table 1. Search Strings by Database

Database	Search String
Scopus / WoS	("multimedia" OR "instructional video" OR "digital game" OR "interactive media") AND ("learning motivation" OR "intrinsic motivation") AND ("higher education" OR "university students")
ERIC	("video-based learning" OR "e-learning media" OR "mobile learning") AND ("student motivation") AND ("asynchronous learning")
Google Scholar	("digital media effectiveness" OR "multimedia effectiveness") AND ("SDT" OR "self-determination") AND ("online motivation" OR "learning engagement")
All Databases	("asynchronous learning" AND "digital media" AND "motivation") AND ("higher education" OR "university") AND (2019:2025[DP])

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 1006-1027

Inclusion and Exclusion Criteria

All the documents found using the search strategy were systematically screened based on a defined set of inclusion/exclusion criteria. These criteria were defined based on theory, guaranteeing consistency of decision-making and avoiding bias, thus enhancing the transparency and replicability of the review. All studies were carefully reviewed to ensure they conform to the requirements for study selection, and those that did not were rejected for clear reasons. To give the reader a quick overview of the decision-making framework, a summary of the criteria and examples of their application are included in Table 2.

Table 2: Inclusion and Exclusion Criteria

Criteria	Inclusion	Exclusion
Year of Publication	2019–2025 (empirical), foundational works without year limit	Before 2019 (except seminal theories)
Study Type	Empirical articles, SLRs, meta-analyses, case studies	Conference papers, book chapters, grey literature, opinion pieces
Population	University/higher education students	K-12 only; non-academic populations
Topic Focus	Digital media effectiveness, learning motivation, SDT, TAM, multimedia design	Studies unrelated to digital media or student motivation
Learning Context	Online, asynchronous, or blended environments	Face-to-face instruction only
Access	Full text accessible	Abstract only; no full-text available

PRISMA 2020 Selection Process

To identify a pool of records, a systematic search was performed in the four major electronic databases, including Scopus, Web of Science (WoS), Education Resources Information Center (ERIC), and Google Scholar between April and May 2025, resulting in 1,183 records. After a thorough deduplication effort, 327 duplicate records were eliminated, leaving 856 distinct records to be passed forward for the next step. The records were then screened for titles and abstracts for inclusion/exclusion based on the predetermined eligibility criteria, and 228 articles were considered relevant and progressed to full-text screening. Of the 72 articles retrieved at the eligibility stage, 42 were excluded due to methodological weaknesses, lack of direct relevance to digital media and learning motivation, or lack of access to the full article.

Thirty articles met all of the criteria for inclusion in the final corpus. The studies examined here span a wide range of geographical contexts, study designs, and digital media contexts to offer a broad empirical base for answering the four guiding research questions of this review. The selection process was carried out with transparency and did conform to the PRISMA 2020 guidelines (Page et al., 2021). All inclusion and exclusion decisions were documented systematically to ensure methodological rigour and to minimise selection bias. The four-stage selection process, identification, screening, eligibility, and inclusion, is visually displayed in Figure 2.

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 1006-1027

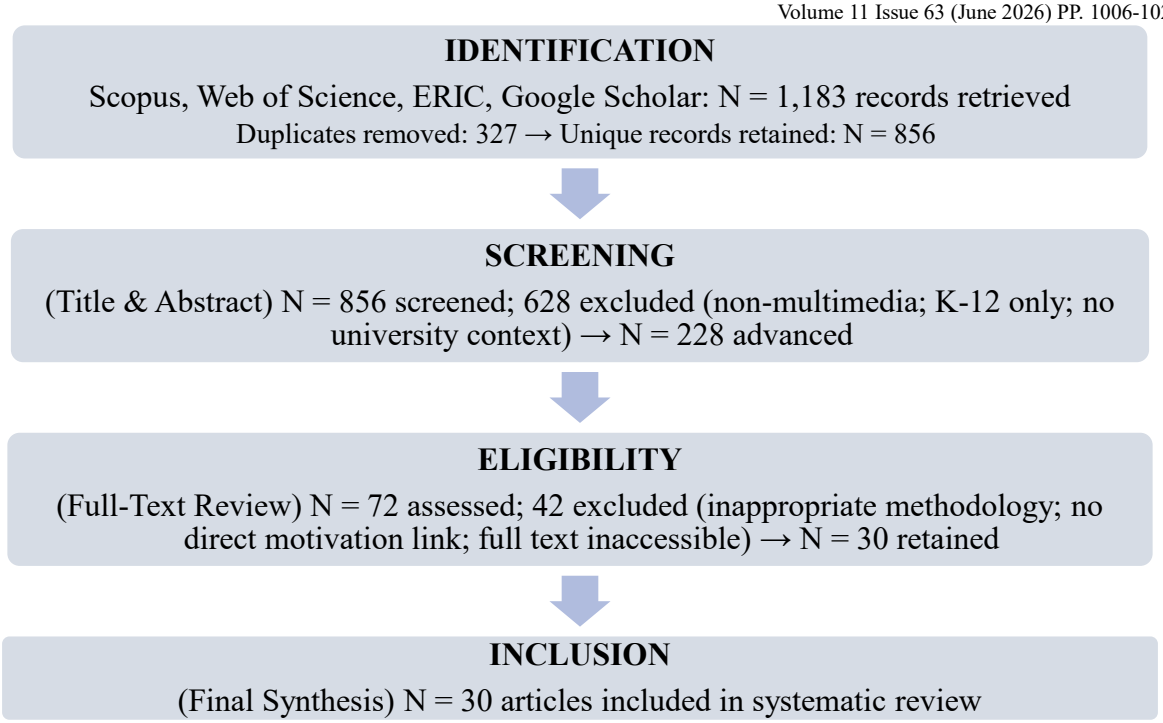


Figure 2: PRISMA 2020 Article Selection Process

Source: Adapted from Page et al. (2021).

Data Synthesis

Thematic synthesis was employed as the primary analytical method for organising and interpreting findings across the 30 included studies. This approach was chosen because of its ability to transcend the descriptive aggregation of data and to develop themes of interpretation that span across a variety of empirical contexts, research designs, and geographical locations (Thomas & Harden, 2008). Systematic extraction of the findings of all 30 studies was conducted using a structured data extraction protocol, and the findings are presented according to the four research questions guiding this review. These studies were coded on various key variables, including digital media type, theoretical framework used, dimensions of SDT addressed, reported digital media motivational outcomes, and contextual moderator factors.

Studies were compared across four parameters: geographical origin, research design typology, media type classification, and reported motivational outcomes. This comparative process helped determine convergent patterns, especially those concerned with the high motivational effectiveness of the same types of media, as well as divergent patterns that indicated contextual moderators in operation. Researcher reflexivity was encouraged but not neglected in the synthesis process by periodically questioning interpretive assumptions and taking special care to prevent the blending of motivational constructs in the studies, which operationalised them differently. In this reflexive position, it was necessary to guarantee the integrity and credibility of the thematic conclusions that were made regarding a body of literature, which was methodologically and contextually heterogeneous.

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 1006-1027

Results

Characteristics of Included Studies

The 30 included articles span 2019 to 2025; 70% (n = 21) were published between 2022 and 2025, reflecting the surge in digital media research following the pandemic. Geographically, Asian contexts predominated (n = 14), followed by North America (n = 6), Europe (n = 5), and other regions, including Africa (n = 5). Research designs encompassed quantitative studies (n = 17), SLRs and meta-analyses (n = 5), RCTs and experiments (n = 4), qualitative studies (n = 2), and case studies (n = 2). Table 3 presents a full summary of the included studies.

Table 3. Summary of Studies Included in the Systematic Literature Review (N = 30)

No.	Author & Year	Country	Digital Media Type	Study Design	Sample	Key Findings
1.	Tani et al. (2022)	Australia	Multimedia video (narrator + visuals)	Quasi-experiment	500+	Multimedia videos produced notable gains in procedural and metacognitive achievement.
2.	Staneviciene & Zekiene (2025)	Lithuania	Varied multimedia (video, animation, interactive)	SLR	Review	Multimedia use in higher education reliably raises motivation and attainment
3.	Perry et al. (2024)	USA	Online instructional videos	Quantitative	Mixed	Presentation mode and technological familiarity shape learning outcomes meaningfully
4.	Molder et al. (2025)	USA	Personal storytelling videos	Quantitative	Undergrad	Instructor-led narrative video fosters engagement and science identity formation
5.	Atkinson et al. (2024)	USA	Student-created videos (STEM)	RCT	Large	Self-produced videos correlate with deeper student involvement in course content
6.	Choe et al. (2019)	USA	Asynchronous lecture videos	Survey	University	Asynchronous video supports adequate satisfaction and learning outcomes
7.	Adeyele (2024)	Nigeria	Simulation games & interactive multimedia	Quantitative	School	Simulation games outperform blended and traditional

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 1006-1027

No.	Author & Year	Country	Digital Media Type	Study Design	Sample	Key Findings
						formats in science outcomes.
8.	Nurhayati et al. (2024)	Indonesia	Online learning media (LMS)	Survey	Students	LMS-based media links positively to achievement and reported motivation
9.	Li et al. (2024)	China	Educational digital games	Quantitative	Students	Engagement mediates the link between game-based tools and motivational outcomes.
10.	Salsabila & Usman (2024)	Indonesia	Digitalized learning media	Quantitative	Admin. Edu.	Digitalized resources shape both learning style preferences and motivation levels.
11.	Prasetya et al. (2025)	Indonesia	Interactive digital media	Quantitative	Students	Favourable perceptions of interactive media link directly to motivation gains
12.	Patongloan & Prayogi (2025)	Indonesia	Asynchronous e-learning	Case Study	University	E-learning in asynchronous mode proves workable in university-level instruction.
13.	Riwanda et al. (2024)	Indonesia	PDF hyperlink (Arabic learning)	Qualitative	Students	Hyperlinked PDFs support asynchronous learning when navigation is interactive
14.	Lin et al. (2024)	Taiwan	Game-based formative assessment	Experiment	Students	Motivational reward structures embedded in game assessments improve performance.
15.	Vo & Ho (2024)	Vietnam	Online learning environment	Quantitative	University	Environmental quality and expectancy-value beliefs moderate student engagement

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 1006-1027

No.	Author & Year	Country	Digital Media Type	Study Design	Sample	Key Findings
16.	Zhang et al. (2024)	China	Digital media + instructor support	Quantitative	College	Pairing digital tools with instructor guidance strengthens student engagement.
17.	Ahmed et al. (2024)	Bangladesh	Digital literacy & online motivation	Quantitative	Teacher trainees	Teacher digital literacy positively associates with online learning motivation
18.	Getenet et al. (2024)	Australia	Digital tech, literacy & self-efficacy	Survey	Online	Technology attitudes and digital literacy predict online engagement
19.	Bai & Gu (2024)	China	Online learning (SDT & K-12)	Survey	K-12	SDT constructs, especially autonomy, explain online engagement variance
20.	Zeng & Xin (2024)	China	Async vs. Sync motivation	Comparative	Online	Autonomous motivation sustains persistence better in asynchronous modes
21.	Hung et al. (2024)	Taiwan	Online async & sync learning	RCT	Medical	Asynchronous delivery comparatively reduces intrinsic motivation
22.	Tong et al. (2022)	Vietnam	Blended learning platforms	Quantitative	Students	Blended formats improve self-study habits, attitudes, and reported motivation
23.	Ismail et al. (2020)	Malaysia	STEM videos in teaching	Survey	Students	STEM video integration is associated with elevated learning engagement
24.	Kamal et al. (2020)	Malaysia	Online learning platforms	TAM	354	COVID-19 transition accelerated positive adoption attitudes toward online platforms

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 1006-1027

No.	Author & Year	Country	Digital Media Type	Study Design	Sample	Key Findings
25.	DeCoito & Estaiteyeh (2022)	Canada	Online STEM curriculum (COVID)	Qualitative	STEM Teachers	Instructional design quality is the chief determinant of online motivation.
26.	Ercan (2014)	Turkey	Multimedia in science education	Experiment	School	Multimedia-enhanced lessons improve achievement and positive science attitudes.
27.	Tugirinshuti et al. (2024)	Rwanda	Video multimedia in astrophysics	Experiment	School	Video-based multimedia strategies lift performance in astrophysics contexts
28.	Rajan & Herbert (2024)	UK	Async & face-to-face environments	Survey	University	Online environments correlate with disruptions in engagement and motivation
29.	Carmi (2024)	Israel	E-learning via Zoom	Survey	University	Zoom-based e-learning garners positive student attitudes and comparable effectiveness
30.	Singh et al. (2024)	India	E-learning in higher education	SLR	Review	E-learning shapes academic outcomes, motivation and attitudes are key mediators

Comparative Effectiveness of Digital Media Types

Results of thematic synthesis across 30 included studies showed significant differences among motivational profiles across various digital media, confirming that digital media type is a valid determinant of learning motivation in an AHE environment. The variations were found to be systematic (not random) and showed clear trends in line with the theoretical predictions of the Technology Acceptance Model (TAM) and the Self-Determination Theory (SDT). In particular, media types that provided more opportunities for learner agency, more frequent and relevant competency feedback, and a more social experience were repeatedly found to yield better motivational results across diverse geographical settings and student populations.

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 1006-1027

Table 4 is a comparative matrix of the effectiveness of the seven types of digital media used on the three psychological needs of SDT, including autonomy, competence, relatedness, and overall intrinsic motivation. The effectiveness ratings are on a 5-point scale ranging from very weak (1) to very strong (5) and very convergent (4) to not very convergent (2) based on the results of multiple independent studies. These ratings were systematically generated by qualitative weighting of the empirical evidence presented in the studies included based on the following factors: sample size, rigor of research design, consistency of findings across contexts, and specificity of the measurement and reporting of motivational outcomes.

Table 4. Comparative Matrix of Digital Media Effectiveness

Types of Digital Media	Autonomy (SDT)	Competence (SDT)	Relatedness (SDT)	Intrinsic Motivation	Key References
Instructional Video (short, <8 min)	4	5	2	4	Tani et al. (2022); Perry et al. (2024)
Digital Games & Simulation	5	5	3	5	Li et al. (2024); Adeyele (2024); Lin et al. (2024)
Mobile Application	4	3	2	3	Salsabila & Usman (2024); Ahmed et al. (2024)
LMS & E-Learning Module	3	3	2	3	Nurhayati et al. (2024); Patongloan & Prayogi (2025)
Social media & Discussion Forums	3	2	4	3	Zhang et al. (2024); Vo & Ho (2024)
Interactive Multimedia (H5P, AR)	4	5	3	5	Staneviciene & Zekiene (2025); Prasetya et al. (2025)
PDF / Static Notes / Digital Text	2	2	1	2	Riwanda et al. (2024); Choe et al. (2019)

Note: 5 = Very high effect; 4 = High; 3 = Medium; 2 = Low; 1 = Very low. Based on synthesis of 30 studies (2019–2025).

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 1006-1027

Figure 3 presents a colour-coded visual synthesis of the effectiveness ratings in Table 4, to allow for easy use across all media types and SDT need dimensions at once. The shading of each cell follows a three-level coding scheme, with green representing high, yellow representing medium, and red representing low effectiveness, and allows readers to immediately see which types of media are most effective in terms of corresponding SDT motivational principles and which are less effective in one or more of the dimensions of psychological need.

The heat map shows that there is a strong theoretical and clear pattern: interactive multimedia tools, digital games, and simulations give consistently high scores for all three dimensions of autonomy, competence, and intrinsic motivation, with medium scores for relatedness, which is difficult to achieve with any asynchronous medium. On the other hand, static content like PDFs consistently scores low on all metrics, which supports the point that passive, non-interactive media are not as good as a primary motivator in an asynchronously delivered content. These visual patterns offer a user-friendly and evidence-based guide for instructional designers and teachers to inform and support their decisions about the selection of digital media in higher education settings with a theoretical underpinning.

Interactive Multimedia (H5P, AR)	**HIGH**	**HIGH**	**MEDIUM**	**HIGH**
Short Instructional Videos	**HIGH**	**HIGH**	**LOW**	**HIGH**
Storytelling Video	**MEDIUM**	**HIGH**	**MEDIUM**	**HIGH**
Mobile Applications	**HIGH**	**MEDIUM**	**LOW**	**MEDIUM**
Social media & Forums	**MEDIUM**	**LOW**	**HIGH**	**MEDIUM**
LMS & E-Learning Module	**MEDIUM**	**MEDIUM**	**LOW**	**MEDIUM**
PDF & Static Notes	**LOW**	**LOW**	**LOW**	**LOW**

Figure 3. Visual Synthesis of Digital Media Effectiveness Across SDT Dimensions
Note: Dark grey = high; medium grey = medium; soft grey = low. Based on a synthesis of 30 studies (2019–2025)

Moderator Factors Influencing Effectiveness

There were six variables that kept appearing as significant factors that determine the effectiveness of the media format in motivating the students (Table 5). The impact of motivation can be magnified or minimized, depending on the factors at play, even though the design of a medium may have qualities that make it especially effective.

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 1006-1027

Table 5. Moderator Factors Influencing Digital Media Effectiveness

Moderator Factor	Description and Implications	Key References
Students' Digital Competence	Learners with stronger digital proficiency benefit more from interactive and immersive media. Those with limited digital skills risk cognitive overload, which counteracts motivational gains.	Getenet et al. (2024); Staneviciene & Zekiene (2025)
Instructional Design Quality	Media effectiveness depends heavily on design decisions, varied formats, embedded feedback, and explicit learning objectives, all of which modulate motivational outcomes regardless of technological sophistication.	DeCoito & Estaiteyeh (2022); Patongloan & Prayogi (2025)
Instructor Support & Facilitation	Instructor presence in asynchronous settings through timely feedback, personalised video content, and guided facilitation markedly elevates the motivational value of any media type.	Zhang et al. (2024); Rajan & Herbert (2024)
Digital Infrastructure & Access	Bandwidth-dependent media such as high-definition video and simulation games underperform where internet connectivity is limited or device access is constrained, particularly in rural Malaysian regions.	Chin et al. (2024); Kamal et al. (2020)
Learning Style & Student Preferences	Individual variation in media preference is well documented. Allowing learners to choose their preferred media format is an expression of autonomy in SDT terms and independently raises motivational engagement.	Salsabila & Usman (2024); Bai & Gu (2024)
Duration & Intensity of Exposure	Videos under eight minutes outperform longer equivalents in motivational impact. Extended exposure to a single media format generates fatigue, diminishing motivational returns over time.	Tani et al. (2022); Perry et al. (2024)

Discussion

RQ1: What Types of Digital Media Are Most Effective in Raising Learning Motivation in The Asynchronous Learning Setting of University Students?

The thematic synthesis of 30 studies reveals a clear hierarchy of motivational effectiveness across digital media types, directly addressing RQ1. Digital games and interactive simulations emerged as the most motivationally potent formats. Through the TAM–SDT lens, these media consistently attain the highest Perceived Usefulness ratings precisely because they fulfil all three SDT psychological needs within a single learning episode. The player agency satisfies autonomy, progressive challenge with immediate feedback satisfies competence, and collaborative or competitive game structures partially address relatedness. Li et al. (2024)

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 1006-1027

confirmed that learning engagement fully mediates the relationship between game-based tools and motivational outcomes, while Adeyele (2024) demonstrated that simulation games outperform blended and traditional formats in science achievement. The reward-embedded game assessments studied by Lin et al. (2024) further corroborate that intrinsically motivating structures produce measurable performance gains.

Interactive multimedia tools (H5P, augmented reality, and animated modules) ranked equally high in overall intrinsic motivation. Staneviciene and Zekiene (2025) confirmed across a systematic review that this category consistently outperforms traditional media in higher education motivation outcomes, and Prasetya et al. (2025) demonstrated a direct positive relationship between students' perceptions of interactive media and their motivation gains. Short instructional videos (under eight minutes) followed closely, representing the most frequently studied media type across the corpus (n = 7). At the lower end of the hierarchy, LMS platforms and static documents such as PDFs predominantly supported extrinsic motivation drivers, such as grade completion and credential accumulation, without generating the responsive feedback or learner agency necessary for autonomous motivation as theorised by SDT. Interpreting this hierarchy through TAM clarifies that media perceived as both useful and easy to use by students reliably translate into higher Perceived Ease of Use and Perceived Usefulness ratings, and ultimately into sustained motivational engagement.

RQ2: What Are the Varied Ways That Media Formats Can Meet the SDT Needs for Autonomy, Competence, And Relatedness?

The evidence shows that the three SDT dimensions are uniformly addressed in any one media format and that the strengths of each medium vary systematically across the three SDT needs. Autonomy was highest with digital games, interactive multimedia, and mobile applications because they embed meaningful learner choice into the activity itself in the activity itself, which allows students to choose from pathways, difficulty levels, or other pacing options. Bai and Gu (2024) identified autonomy as the SDT construct most strongly predictive of online learning engagement, showing the centrality of autonomy in an asynchronous environment. Short instructional videos also received high scores on autonomy, meaning that students can pause, rewind, and repeat the content as they wish, which is important in Malaysian higher education because students often have multiple responsibilities that compete for their time, such as family duties (Zeng & Xin, 2024).

Interactive multimedia and digital games were rated highest for competence, with many features of the games involving adaptive feedback, scaffolding, and observable indicators of mastery. Even one-way media can support competence if it has clear explanations and worked examples, as demonstrated by Tani et al. (2022) that narrated videos in multimedia significantly increased both the procedural and metacognitive outcomes. By contrast, LMS platforms and static PDFs were consistently rated as less competent in achieving efficacy-building feedback, which SDT considers a key criterion for being effective (Nurhayati et al., 2024; Riwanda et al., 2024). In all media categories, the most systematically unmet need was relatedness, as this is a theoretically significant finding. Even the best-performing formats (digital games and interactive multimedia) received medium scores when applied as an asynchronous use. Social media and structured discussion forums had the highest potential for relatedness among the media types reviewed. However, only when structured and facilitated. Zhang et al. (2024) revealed that digital peer support with instructor facilitation significantly improved Chinese

university students' relational engagement, and Vo and Ho (2024) showed that the quality of the online social environment is a key factor in moderating sustained engagement.

RQ3: What Motivational Design Features Are Consistently Associated with Intrinsic Motivation?

Interpreting the evidence through the TAM–SDT framework reveals four design features that consistently and significantly predict intrinsic motivation across diverse media types and geographic contexts. First, embedded adaptive feedback is the single most recurrent design feature associated with high intrinsic motivation. Whether delivered through game-based progression systems, interactive H5P branching activities, or instructor-annotated video timestamps, timely and informative feedback directly supports the SDT need for competence by communicating mastery progress and correcting misconceptions without interrupting flow (Li et al., 2024; Perry et al., 2024). Second, learner-controlled pacing and navigation features are strongly linked to autonomy satisfaction. Studies by Zeng and Xin (2024) and Hung et al. (2024) jointly demonstrate that asynchronous formats which permit genuine self-direction sustain motivation more effectively than synchronous delivery, particularly when learners face competing demands. Third, instructor presence, broadly defined to include narrated video, personalised storytelling, and timely feedback in discussion threads, is a robust motivational design feature that transcends media type. Molder et al. (2025) showed that personal storytelling in instructor videos significantly boosts engagement and science identity, while DeCoito and Estaiteyeh (2022) identified instructional design quality as the primary determinant of online motivation in STEM contexts, reinforcing that the educator's role remains indispensable even in fully asynchronous environments. Fourth, multimodal and varied content structuring is consistently associated with higher motivation, particularly in LMS-based delivery. Patongloan and Prayogi (2025) and Nurhayati et al. (2024) both report that motivation within LMS platforms rises substantially when content incorporates varied media elements rather than relying on static text alone. This finding implies that no media type operates in isolation; even inherently lower-motivation platforms can be redesigned to generate more intrinsically engaging experiences through thoughtful multimodal structuring.

RQ4: What Are the Contextual Factors That Moderate These Relationships, Especially in the Context of Higher Education in Malaysia?

The TAM–SDT framework predicts that motivational outcomes are not determined solely by media design but are substantially shaped by contextual moderators. This review suggests six such moderators with specific implications for Malaysian public universities. As a first step, digital competence is a crucial moderator for the students. Getenet et al. (2024) showed that digital literacy and self-efficacy are predictive of online engagement. At the same time, students who do not have strong digital skills may experience cognitive overload when viewing high-interactivity media, a condition that is likely to cancel out the autonomy and competence that the high-interactivity can provide for students with stronger digital skills (Staneviciene & Zekiene, 2025). This is especially relevant in Malaysian public universities, where digital skills are heavily skewed towards their urban and rural demographics, calling for pre-course digital skills assessments and scaffolded onboarding. Second, instructional design quality serves as a threshold moderator: if the quality of the instructional design is below a threshold, then none of the media types is very motivating, irrespective of their theoretical capabilities. This was found by DeCoito and Estaiteyeh (2022) as the main reason why learners are motivated to participate in online learning in STEM, and by Patongloan and Prayogi (2025) that flexible

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 1006-1027

asynchronous learning is less effective than synchronous learning in the case of weak instructional structure.

Third, instructor support and facilitation amplify the motivational value of every media type studied. Rajan and Herbert (2024) documented significant disruptions in motivation and engagement when instructor presence was absent in online environments, and Zhang et al. (2024) confirmed that pairing digital tools with active instructor facilitation generates substantially stronger engagement than digital tools alone. This moderator is especially significant in the Malaysian collectivist cultural context, where students typically value relational and authority-guided learning experiences and may be reluctant to engage in self-directed inquiry without explicit encouragement from lecturers. The fourth feature is the moderation of digital infrastructure and access equity in the implementation of media that consume a lot of bandwidth, like high-definition simulation games and augmented reality applications. Chin et al. (2024) and Kamal et al. (2020) noted that there was a disparity in the level of connectivity between rural and urban areas in Malaysia, which means that for any hierarchical media model for higher education in Malaysia, contingency strategies for contexts with low bandwidth need to be included. Fifth, motivation to engage with the learning is also affected by the autonomy in media choices and individual learning style preferences. The results of Salsabila and Usman (2024) showed that using digital media formats that respect individual preferences has a significant effect on the learners' motivation and online learning styles, which aligns with the Self-Determination Theory (SDT) principle of intrinsic motivation through perceived choice. Sixth, the length and intensity of media exposure moderate the gains in motivation: as Tani et al. (2022) and Perry et al. (2024) reported, videos longer than eight minutes show less and less motivational gains as a function of time and intensity of exposure.

This evidence supports Malaysian teachers creating asynchronous materials by advocating for a "chunked" and "varied" media approach rather than long-form, single-media delivery. These six moderators clarify that the TAM–SDT framework must be applied contextually. Even when SDT requirements are met and positive TAM perceptions are achieved, factors such as insufficient digital competence, inadequate infrastructure, or limited instructor facilitation can hinder the media's ability to motivate students. Therefore, the following aspects, including designing effective asynchronous digital education for Malaysian public universities, require simultaneously addressing media selection, instructional design quality, and student engagement context.

Theoretical Contributions

This review makes three theoretical contributions. First, it offers an empirical validation of the integrative TAM-SDT framework and shows that TAM perceptions are more positive for media types that are more complementary to digital learning SDT needs, thus supporting the theoretical complementarity of both frameworks. Secondly, it proposes that the dimension of relatedness in digital media design is the least studied one, although it is important for the development of authentic intrinsic motivation in the context of asynchronous learning. Most media, whether they are social, collaborative, or technologically advanced, are more about compliance than engagement. Moreover, digital competence is a moderator, indicating that the use of media must be done responsibly, which is not only choosing the right media but also constantly building up students' digital competence. Together, these three contributions provide a theoretical basis that empowers researchers to conduct future empirical studies on the usage of digital media in Malaysian public universities. In the context of collectivist cultural values,

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 1006-1027

inconsistent digital infrastructure, and different learner capacities, the contextually sensitive application of TAM–SDT is significant.

Practical Implications for Malaysian Higher Education

Drawing from the evidence synthesis, Table 6 presents a hierarchical framework for digital media deployment ordered by motivational effectiveness. Malaysian public university lecturers and instructional designers are encouraged to use the following layered media: digital games and interactive media are used as the main content and assessment media, and micro instructional videos are used to highlight the relatedness among the contents, while LMS is used as a scaffolding which connects the contents and creates an asynchronous learning environment.

Table 6. Recommended Hierarchy of Digital Media Use

Priority	Types of Digital Media	Motivational Effect	Recommended Use
1	Digital Games & Interactive Simulations	Very High	Formative assessment, skills-based practice, and problem-solving activities
2	Interactive Multimedia (H5P, AR, Animation)	Very High	Visualising abstract concepts, exploratory and experiential learning
3	Short Instructional Videos + Storytelling	High	Core content delivery, procedural demonstrations, narrative-based learning
4	Mobile Applications (with social elements)	Medium–High	Self-directed practice, micro-quizzes, daily reflection activities
5	Structured Discussion Forums & social media	Medium	Collaborative projects, peer reflection, and community-building activities
6	LMS + E-Learning Modules (multimedia-enriched)	Medium	Course navigation, structural scaffolding, and summative assessment management
7	PDF & Static Notes (supplementary only)	Low	Reference reading and supplementary depth not a primary motivation driver

Source: Synthesised from included studies (2019–2025).

In Malaysia, additional factors must be considered. Hierarchies should be flexible, incorporating contingency plans for students in rural areas with limited connectivity. Given the collectivist nature of Malaysian campus culture, media delivery should be predominantly asynchronous to support peer collaboration and relatedness. Furthermore, the linguistic and cultural diversity of student groups necessitates culturally responsive media design that accommodates various communication patterns and learning preferences.

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 1006-1027

Conclusion

The results of this systematic literature review showed that the characteristics of digital media that affect the learning motivation of university students in an asynchronous learning environment were synthesised from 30 empirical studies. The main finding is that the motivational potency of the digital media formats is not interchangeable, in that their motivational potency is closely related to their fulfillment of the SDT principles of autonomy, competence, and relatedness, mediated through the technology acceptance dimensions of the TAM.

As for RQ1, it was revealed that the most motivating types of digital games for all three SDT needs were digital games, interactive simulations, and H5P-based multimedia, which was also rated the highest on TAM Perceived Usefulness. For the synthesis of RQ2, most interactive formats were found to be suitable for autonomy and competence, while relatedness was the most consistently clear-cut dimension of SDT that is lacking in all media types for asynchronously delivered interactive formats, thus affecting the design of the interactive format. For RQ3, the four motivational design features that showed a consistent prediction of intrinsic motivation across the media types that were used were: embedded adaptive feedback, learner-controlled pacing, visible instructor presence, and multimodal content structuring. Finally, addressing RQ4, six contextual moderators were identified. The researchers found that the motivating effect of a given medium is moderated by contextual factors, particularly in the context of higher education in Malaysia, which are identified as digital competence, quality of the instructional design, facilitation by the teacher, access to infrastructure, preferences of learners, and duration of exposure to media.

A notable research gap was identified: no prior study has comprehensively examined the comparative motivational effects of digital media types in Malaysian public universities using an integrated TAM–SDT framework. The direct purpose of the primary empirical study, to which this review directly informs, is to address this gap. It proposes a hierarchical model of the media, which is grounded in research and provides instructional designers, curriculum developers, and policy makers with a foundation for improving digital learning environments in ways that truly support student motivation and engagement.

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 1006-1027

Acknowledgements: The author extends sincere appreciation to the Faculty of Education, Universiti Kebangsaan Malaysia, for the academic environment and resources that made this review possible. Gratitude is also owed to supervisors, colleagues, and reviewers whose constructive engagement strengthened the manuscript.

Funding Statement: No Funding

Conflict of Interest Statement: The author declares no conflict of interest. The author has contributed solely to this work and approves the final version for submission to IJEPC.

Ethics Statement: This study did not involve human participants, animals, or sensitive personal data. The review was conducted exclusively on publicly available peer-reviewed literature in accordance with accepted academic integrity and ethical publishing standards.

Author Contribution Statement: Aisyah Arina Binti Mohammad Shahrazel held sole responsibility for all aspects of this manuscript: conceptualisation, systematic search design and execution, screening, data extraction, thematic synthesis, drafting, critical revision, and final approval for submission.

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 1006-1027

References

Adeyele, V. O. (2024). Relative effectiveness of simulation games, blended learning, and interactive multimedia in basic science achievement of students. Pendidikan Sains.

Ahmed, M. M., Sultana, M., Hossain, S., & Islam, M. R. (2024). The nexus between teacher trainees' digital literacy and online learning motivation. Journal of Education and Learning, 13(2), 45–58.

Atkinson, A., Bell, P., De La Rosa, I., DeGeorge, T., Jonassen, L., Kokil, V., Lee, S., Malloy, M., Pinzon, K., Robertson, C., Savage, J., Shahbaz, R., Villanueva, O., Wludyga, J., & Morris, J. (2024). Student-created videos in online STEM education: A large, interdisciplinary, randomized control study. Discover Education, 3. https://doi.org/10.1007/s44217-024-00283-8

Bai, X., & Gu, X. (2024). Contribution of self-determining theory to K–12 students' online learning engagements. Educational Technology Research and Development.

Carmi, G. (2024). E-learning using zoom: A study of students' attitude and learning effectiveness in higher education. Education and Information Technologies.

Chin, Y. F., Yong, F. L., & Woo, L. H. (2024). Issues and challenges faced by private higher education institutions (PHEIs) in Malaysia. Malaysian Journal of Education.

Chiu, T. K. F. (2021). Applying the self-determination theory (SDT) to explain student engagement in online learning during the COVID-19 pandemic. Journal of Research on Technology in Education, 55(1), 14–30.

Choe, R. C., Scuric, Z., Eshkol, E., Crues, S., Henricks, A., Hash, R., Bohon, L., Scott, S. S., TNames, G., & Shapiro, C. (2019). Student satisfaction and learning outcomes in asynchronous online lecture videos. CBE Life Sciences Education, 18(4). https://doi.org/10.1187/cbe.18-08-0171

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319–340. https://doi.org/10.2307/249008

Deci, E. L., & Ryan, R. M. (1985). Intrinsic motivation and self-determination in human behavior. Plenum Press.

Deci, E. L., & Ryan, R. M. (2000). The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behavior. Psychological Inquiry, 11(4), 227–268.

DeCoito, I., & Estaiteyeh, M. (2022). Online teaching during the COVID-19 pandemic: Exploring science/STEM teachers' curriculum and assessment practices. Disciplinary and Interdisciplinary Science Education Research, 4(1), 1–16. https://doi.org/10.1186/s43031-022-00049-4

Ercan, O. (2014). The effects of multimedia learning material on students' academic achievement and attitudes towards science courses. Journal of Baltic Science Education, 13(5).

Fathali, S., & Okada, T. (2018). Technology acceptance model in technology-enhanced OCLL contexts: A self-determination theory approach. Australasian Journal of Educational Technology, 34(4), 138–154.

Getenet, S., Cantle, R., & Redmond, P. (2024). Students' digital technology attitude, literacy, and self-efficacy, and their effect on online learning engagement. Education and Information Technologies.

Hung, C.-T., Wu, S., & Chen, Y. (2024). The evaluation of synchronous and asynchronous online learning: Student experience, learning outcomes, and cognitive load. Medical Education Online, 29(1). https://doi.org/10.1080/10872981.2024.2305668

Ismail, M. Z., Mansor, A. N., & Ibrahim, A. (2020). Relationship between STEM videos in teaching and students' learning engagement. PEOPLE: International Journal of Social Sciences, 6(1), 112–127.

Kamal, A. A., Shaipullah, N. M., Truna, L., Sabri, M., & Junaini, S. N. (2020). Transitioning to online learning during COVID-19 pandemic: Case study of a pre-university centre in Malaysia. International Journal of Applied Engineering Research, 15(6), 634–641.

Kemp, A., Palmer, E., & Strelan, P. (2024). Testing a novel extended educational technology acceptance model using student attitudes towards virtual classrooms. British Journal of Educational Technology, 55(1), 198–214.

Li, Y., Chen, D., Deng, X., Liu, X., & Wu, C. (2024). The impact of digital educational games on students' motivation for learning: The mediating effect of learning engagement. Frontiers in Psychology, 15. https://doi.org/10.3389/fpsyg.2024.1395727

Lin, Y.-L., Wang, W.-T., & Kuo, J. (2024). Motivational incentives in the context of online game-based formative assessment and improved student learning performance. Computers & Education, 213. https://doi.org/10.1016/j.compedu.2023.104994

Molder, A., Anderton, B., Howell, E., Goodwin, S., Behrman, S., & Ellefson, M. (2025). Use of personal storytelling in educational videos promotes student engagement and science identity in undergraduate biology courses. Journal of Microbiology & Biology Education, 26. https://doi.org/10.1128/jmbe.00084-25

Nurhayati, R., Moha, L., & Fiidzni, M. (2024). The role of online learning media in increasing student achievement and learning motivation. Journal of Educational Technology, 8(3), 215–228.

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., … Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. BMJ, 372. https://doi.org/10.1136/bmj.n71

Patongloan, A., & Prayogi, R. (2025). Effectiveness of e-learning media in asynchronous learning: A case study in higher education. Journal of Educational Innovation, 12(1), 44–59.

Perry, M., Azevedo, R., Henricks, G., Crues, R., & Bhat, S. (2024). Learning from online instructional videos considering video presentation modes, technological comfort, and students characteristics. International Journal of Human–Computer Interaction, 41(19), 2955–2972. https://doi.org/10.1080/10447318.2024.2328914

Prasetya, R. N., & Budiman, A. (2025). Student perceptions of the use of interactive digital media in improving learning motivation. Journal of Educational Research, 18(1), 78–91.

Rajan, M. H., & Herbert, C. (2024). Disrupted student engagement and motivation: Observations from online and face-to-face university learning environments. Higher Education Research & Development, 43(2), 410–424.

Riwanda, A., Ridha, M., & Islami, R. (2024). Empowering asynchronous Arabic language learning through PDF hyperlink media. Al-Arabiyah: Journal of Arabic Language Teaching, 11(2), 112–127.

Roca, J. C., & Gagné, M. (2008). Understanding e-learning continuance intention in the workplace: A self-determination theory perspective. Computers in Human Behavior, 24(4), 1585–1604.

Salikhova, N. R., Lynch, M. F., & Salikhova, A. B. (2020). Psychological aspects of digital learning: A self-determination theory perspective. Contemporary Educational Technology, 12(1).

Salsabila, T., & Usman, O. (2024). The effect of digitalization of learning media on motivation and online learning style of office administration education students. Journal of Office Administration Education, 9(2), 33–45.

Singh, R., & Singh, S. K. (2024). Influence of e-learning on the students of higher education in the digital era: A systematic literature review. Education and Information Technologies. https://doi.org/10.1007/s10639-023-12356-3

Staneviciene, E., & Zekiene, G. (2025). The use of multimedia in the teaching and learning process of higher education: A systematic review. Sustainability, 17. https://doi.org/10.3390/su17198859

Sukendro, S., Habibi, A., Khaeruddin, K., Indrayana, B., Syahruddin, S., Makadinda, T. K., & Juhanis, J. (2020). Using an extended Technology Acceptance Model to understand students' use of e-learning during COVID-19: Indonesian sport science education context. Heliyon, 6(11). https://doi.org/10.1016/j.heliyon.2020.e05410

Tani, M., Manuguerra, M., & Khan, S. (2022). Can videos affect learning outcomes? Evidence from an actual learning environment. Educational Technology Research and Development, 70(5), 1675–1693. https://doi.org/10.1007/s11423-022-10147-3

Tong, D. H., Uyen, B. P., & Ngan, L. K. (2022). The effectiveness of blended learning on students' academic achievement, self-study skills, and learning motivation. Heliyon, 8(5), e09797. https://doi.org/10.1016/j.heliyon.2022.e09797

Tugirinshuti, G. J., Bizimana, E., Mwesigye, A., & Kamanzi, J. (2024). Exploring the effects of video-based multimedia instructional strategies on students' performance in astrophysics. Kibogora Polytechnic Scientific Journal, 5(1).

Vo, H., & Ho, H. (2024). Online learning environment and student engagement: The mediating role of expectancy and task value beliefs. Education and Information Technologies.

Zeng, H.-L., & Xin, Y. (2024). Comparing learning persistence and engagement in asynchronous and synchronous online learning: The role of autonomous motivation. Internet and Higher Education, 62. https://doi.org/10.1016/j.iheduc.2024.100930

Zhang, H., Gao, M., & Xu, X. (2024). Combining digital support with teacher support: Engagement of Chinese college students in asynchronous online learning. Computers & Education, 213. https://doi.org/10.1016/j.compedu.2023.104977