

## Research Article

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## Development of Gamification-Based Economic Learning Media as an Effort to Optimize Differentiated Learning for Inclusive High School Students

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### Abstract

**Background/purpose.** The purpose of this research is to analyse and aim to develop a gamification-based learning tool. This is due to the diverse learning needs and responds to the challenge of differentiated learning that is student-centred in the classroom rather than teacher-centred.

**Materials/methods.** The research method used is a research development (RnD) approach with the development model using the ADDIE model consisting of Analyze, Design, Development, Implement, and Evaluate stages. The media developed in this research includes interactive elements such as animations, videos, minigames, and quizzes, which can then be accessed through various platforms such as websites and applications.

**Results.** This research goes through the validation stage contained in the development stage. Validity is carried out by material, language, and media expert validation. Based on the results of the validity that has been carried out, it shows high feasibility with an average value of 96.15%. The implementation of the pilot test involving 35 students in a small class showed positive responses, with 93.30% of students feeling that this media increased their knowledge and motivation, 93.12% appreciated the visual design, and 73.75% of students stated that it was easy to use.

**Conclusion.** Finally, this study suggests that gamification-based learning media can be an effective tool to support inclusive and engaging education. Further research is recommended to test the effectiveness of gamification-based teaching materials in large classes with more than 35 students.

## 1. Introduction

Fundamental changes in human life are influenced by the recent accelerated digitalisation (Acemoglu & Restrepo, 2020; Alenezi, 2023). Indirectly, this era wants quality resources from educational institutions (L. Yang, 2024). These demands require major changes in national education (Mundy, 2023; Thakran & Sharma, 2016). Learning requires students to have the ability to think critically, communicate, create, and renew (Calavia et al., 2021; Dwyer & Walsh, 2020). This is the main capital to improve the quality of human resources (Chahar et al., 2019; Muñoz-Pascual et al., 2021). Quality and educated human resources make moving forward easier for a country (Huang et al., 2025; Zhang et al., 2025). Learning is part of the education process (Aulakh et al., 2025; Bagherimajd & Khajedad, 2025; Xie et al., 2025). Kaewunruen (2019) stated that learning is interactive educational communication between educators and students through strategies, methods, models, and teaching materials. The achievement of a learning process is marked by changes in behavior that are better in cognitive, psychomotor, and affective domains (Kuo et al., 2024; Owan et al., 2022).

The development of science and technology in classroom learning is no longer monopolized by the presence of educators, students learn anywhere and anytime according to their interests, learning styles, and needs (Lin & Muenks, 2025; Nirmala et al., 2022; Velu et al., 2025). Learning designers are required to be able to design and utilize various types of media, learning resources, and other aids (Dalle et al., 2018; Drysdale, 2019). Learning takes place in a fun, effective, and efficient manner (Davidovitch & Wadmany, 2025; Feiyue, 2022). This is in line with Nurhidayat et al (2024) who argue that 21st-century educators are expected to utilize technology in developing learning media to motivate students in line with their potential. Good learning quality if it can facilitate student needs. Each student has different uniqueness and characteristics (Rasskazova & Soldatova, 2023; Somerton et al., 2021; Vatsalan et al., 2022).

The paradigm of humanist education gives rise to inclusive education that provides opportunities for all children to receive quality education (Fitri, 2022; Nabiullina, 2015; Surjanti et al., 2022; Zhukova et al., 2022). The existence of inclusive education has the potential to provide a meaningful contribution to every child with their diversity (Ali et al., 2024; Hogan et al., 2025; Motitswe, 2025). Inclusive education is the implementation of multicultural education that helps students understand, accept, and appreciate others who have different ethnicities, cultures, values, personalities, and physical and psychological functions (Boyle et al., 2024; Parkhouse et al., 2019). All students can participate and succeed in regular classes (Cai & Lombaerts, 2024; Cheatham et al., 2017; Rodríguez-Dorta & Borges, 2017; Scager et al., 2017; Schoem et al., 2023). Systematic learning management in secondary schools will support the academic success of students with intellectual disabilities (Alqazlan et al., 2019; de Alvarenga et al., 2023; Thompson et al., 2023).

Meanwhile, gamification-based learning is needed to support inclusive learning (Gallego-Durán et al., 2019; Sitra et al., 2017). It is also a form of applying information technology in educational economics learning. Gamification is important in inclusive education because it utilises game mechanics, such as points, badges, and leaderboards, which are very useful for increasing intrinsic motivation and student engagement in the classroom (Abenes et al., 2023; Anderle et al., 2025; Luarn et al., 2023). It helps to accommodate students' diverse learning styles, interests and readiness in a differentiated learning setting (Tsay et al., 2018). The implementation of game-based learning should provide multi-modality content representation such as animation, video, text, and various action paths or minigames and quizzes (Pérez et al., 2018). This ensures accessibility and flexibility which are essential to meet the individual needs of diverse students in an inclusive environment while facilitating effective differentiation (Bamford & Moschini, 2025; Navas-Bonilla et al., 2025; Suresh Babu & Dhakshina Moorthy, 2024).

The underlying rationale for this research stems from the increasing need and trend in inclusive education as a strategy that addresses diverse needs and potential for differentiated learning with the support of gamification-based media to improve motivation and outcomes (Bernaschina, 2024; Navas-Bonilla et al., 2025). The gap addressed in this research is the lack of gamification-based economic learning media that has been specifically developed and validated (Kam & Umar, 2023; X. Li et al., 2024; Perez-Aranda et al., 2024), which designed to optimise differentiated learning for senior high school students with inclusive learning needs, particularly in the topic of service company accounting. Furthermore, this research aims to develop game-based economic learning media using the ADDIE model. The findings imply that educators can use specialised gamification-based media as a practical tool to effectively implement differentiated learning in inclusive high school economics classrooms, potentially improving student motivation and learning outcomes. The novelty of this research lies in the specific application of gamification principles in the context of differentiated learning for inclusive education in economics to high school learning, focusing on the development and concrete validation of a multi-platform (web/Android) learning media product centred on the topic of service company accounting.

## 2. Literature Review

### 2.1. Differentiated Learning and Inclusive High School Student

Differentiated learning is a learning activity process that takes into account the abilities, likes, and learning needs of students so that they do not get frustrated and feel like failures in their learning experiences (Nouman et al., 2024; Subban et al., 2025). The essence of differentiated learning is in line with the progressivism school that strongly supports the student-centered education process and aims to develop various aspects of individual abilities in facing the progress of the times and complexity (Bukamal, 2024; Cannella-Malone et al., 2021). While providing a variety of learning opportunities, it can support the academic success of students with disabilities (Hakim et al., 2015, 2020; Hoeh & Bonat, 2020; Hosshan, 2022; Price & Slee, 2021; Surjanti et al., 2022, 2024).

In an inclusive high school environment, characterised by significant diversity in terms of readiness, interests, learning profiles, and potential disabilities (Hosshan et al., 2024; Molina Roldán et al., 2021; Triviño-Amigo et al., 2022, 2023; Yazicioğlu et al., 2025). Differentiated learning is not only beneficial, but also essential to ensure meaningful access to the curriculum and equitable participation for all students (Hakim et al., 2018; Kurniawan et al., 2019; S. W.-Y. Wan, 2017). This approach requires flexible implementation of core strategies and differentiating content, as well as tracking what students learn, their understanding of managing and associating ideas, and the process by which students demonstrate learning (Chow, 2023; Lübke et al., 2021; Molina Roldán et al., 2021). Based on ongoing assessment and rooted in Universal Design for Learning (UDL) principles to proactively remove barriers and provide multiple ways to engage, represent, act and express (Griful-Freixenet et al., 2017; Veytia Bucheli et al., 2024). Effective differentiation in inclusive secondary schools thus moves beyond simple accommodations, but actively creates varied pathways towards rigorous learning goals. This promotes academic growth and independence among diverse students (D'Intino & Wang, 2021; Jager et al., 2025; Letzel et al., 2020; Lindner & Schwab, 2020; Nketsia et al., 2024).

Implementing differentiated learning effectively in inclusive high school settings, however, presents challenges, including teacher preparedness, resource constraints, and the complexity of managing diverse needs within larger classes (Gibbs, 2023). To address these, supportive structures like collaborative teaching models, flexible grouping strategies, and the integration of adaptable learning technologies are increasingly recognized as crucial facilitators (Bukamal, 2024). The ultimate goal of differentiation within inclusive education aligns with social justice principles: to provide every high school student, regardless of individual difference or disability, with appropriately challenging

and engaging learning experiences that maximize their potential and prepare them for future education, employment, and civic participation (Hosseini et al., 2024; Lindner & Schwab, 2020).

## **2.2. Gamification as Learning Media**

Learning media are systematically arranged materials—encompassing information, tools, and texts—designed according to learning principles to facilitate the mastery of specific competencies (Yekela et al., 2024). The integration of technology within such media enhances its versatility, allowing application across all subjects and educational levels, thereby strengthening its necessity for modern pedagogy (Kurniawan & Lestari, 2019; Qureshi et al., 2021; Sahin & Yilmaz, 2019; Tawafak et al., 2021). Empirical support for technology-enhanced media is evident in studies demonstrating the efficacy of game-based platforms like Kahoot! in flipped classrooms (Dianati et al., 2020; Özdemir, 2025), interactive e-modules for diverse subjects (Batubara et al., 2022; Panjawiati et al., 2024), and specialized tools integrating contextual or subject-specific content such as Islamic economics and banking (Ariska & Hakim, 2021; Denisa & Hakim, 2021; Langgi & Hakim, 2021). This collective evidence underscores technology's role in creating adaptable and engaging learning pathways.

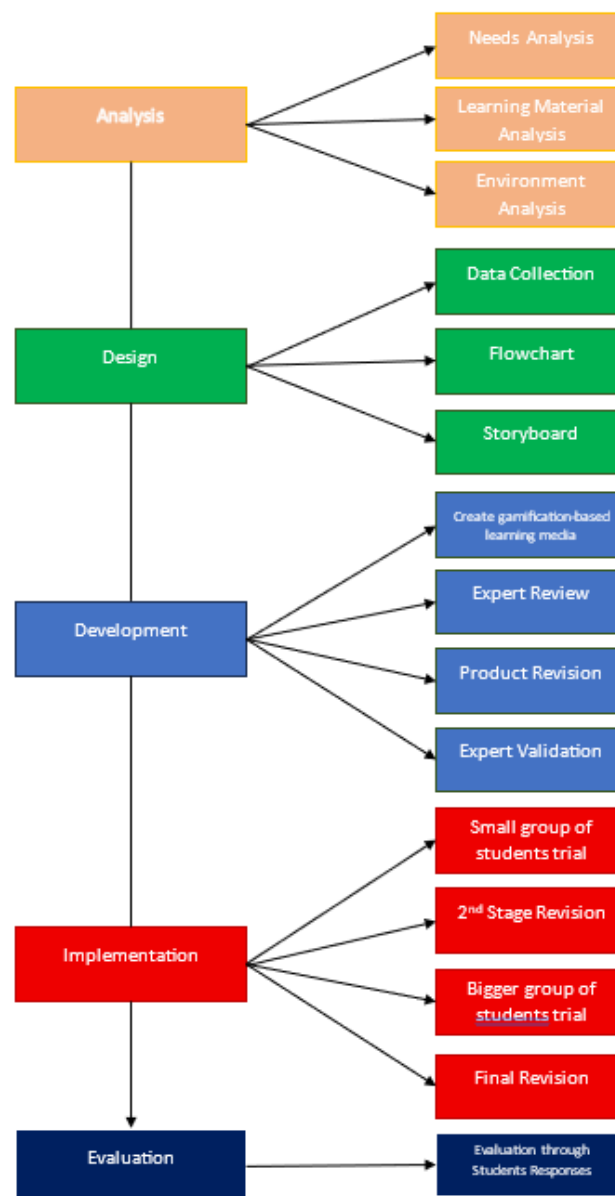
On the other hand, results of the research show that by utilizing various existing technologies as teaching materials, it will influence students to understand the basics of accounting and improve their competence. In addition, learning with interactive media is considered more enjoyable, effective, and attracts students' interest in learning (Cerya et al., 2021; Kartini & Putra, 2021; Voshaar et al., 2023).

One of the advantages of games as learning media is that they increase the logic of understanding a problem through game projects that can support the education process. Research conducted shows that game-based learning can improve student understanding (Byusa et al., 2022; Hartt et al., 2020; Ke et al., 2024; Patmanthara et al., 2019; K.-H. Yang & Chen, 2023). Gamification is an element of game design used to motivate, increase user activity, and improve memory. The gamification learning approach provides an alternative to make the learning process more interesting, fun, and effective (Alsawaier, 2018; De-Marcos et al., 2016; Lee, 2023; Osipov et al., 2015; Signori et al., 2018). Gamification-based learning media have been widely used in various fields of study, including engineering and pharmacy. According to (Brull et al., 2017; Mårell-Olsson, 2021; Moseikina et al., 2022; Raju et al., 2021) digital methods in the form of gamification help improve student knowledge (D. Li & Jianxing, 2025; Lyons et al., 2023). The use of games as a medium for learning accounting can improve student motivation and learning outcomes. This is in line with research (Fadhillah & Khairani, 2024; Haji Moradkhani et al., 2023; Wardana & Sagoro, 2019). Interactive learning media applications have a positive impact on the quality of learning (Aulia et al., 2024; Yaseen et al., 2025).

Based on the analysis data, the potential of gamification-based learning media research effectively improves fun, interactive, and active learning (Balaskas et al., 2023; Imran, 2023). Previous research on gamification was conducted related to: games, medium, students, and teachers. Meanwhile, another keyword cluster shows that learning and paper have a relation with gamification-based learning (Dehghanzadeh et al., 2024; Ho et al., 2022; M. Li et al., 2023; Slamet & Meng, 2025). Several studies stated that gamification media improves the concentration of ADHD students, improves learning outcomes, motivation, activity, interest, and better memory (Alabdulkareem & Jamjoom, 2020; Antonopoulou et al., 2022; Doulou et al., 2025; Lumsden et al., 2016; Mahmoudi et al., 2024; Sergis et al., 2024; B. Wan et al., 2021). Seeing this potential, the novelty of this research focuses on the development of gamification-based learning media for economic subjects, accounting service material to optimize the implementation of differentiated learning in Inclusive High Schools.

### 3. Methodology

This study employs the ADDIE research and development model, comprising five iterative stages like Analysis, Design, Development, Implementation, and Evaluation. As a structured framework, ADDIE facilitates systematic product development to achieve targeted outcomes with optimal efficiency and effectiveness (Crompton et al., 2024). Field trials for the gamification-based learning media will be conducted across distinct educational settings, an inclusive classroom environment at SMAN 4 Sidoarjo (Senior High School 4 Sidoarjo), and a mainstream classroom setting at SMAN 2 Sidoarjo (Senior High School 2 Sidoarjo).



**Figure 1.** Research and Development Model

This product development-based research employed multimodal data collection strategies to holistically address developmental rigour and ecological validity (Andrade, 2018; Noroozi et al., 2019). Furthermore, semi-structured interviews were used to establish initial pedagogical requirements (Gaulke et al., 2024; Oplatka, 2018; Thille et al., 2021), while systematic classroom observations documented authentic learning phenomena and implementation barriers (Collier-Meek et al., 2019; Hagermoser Sanetti et al., 2018; Ketsman et al., 2024; Lowell & Tagare, 2023; Russo-Campisi, 2017; Splett et al., 2022). These formative techniques collectively informed the iterative

prototype through empirical insights on curriculum alignment and instructional challenges in inclusive settings (Pinger et al., 2018; Töllner et al., 2025; Wylie & Lyon, 2020).

The validation procedure adopted a three-tiered expert assessment protocol in which subject matter experts evaluated content accuracy, media experts assessed interface usability and technical functionality, and linguists scrutinised communicative clarity (Hemming et al., 2020; Noveanu et al., 2017). This collaboration ensures a comprehensive feasibility assessment across the content, media, and language dimensions. Finally, a structured questionnaire measured implementation outcomes by measuring learner engagement metrics, namely motivation, knowledge retention, and educators' classroom perceptions of pedagogical integration (Holmes, 2018; Lyon et al., 2018). In addition, the questionnaire was used to capture experiential data from 35 participants in different educational environments (inclusive/general classrooms).

Quantitative data were processed using a Likert scale. This scale is arranged in the form of a statement and followed by five responses shown in Table 1.

**Table 1.** Assessment Scores for Answer Choices

No.	Quantitative Analysis	Score
1.	Very good	5
2.	Good	4
3.	Enough	3
4.	Not enough	2
5.	Very less	1

The results of the assessment scores were averaged from a number of trial sample subjects and converted into assessment statements to determine the quality and level of usefulness of the resulting product.

**Table 2.** Learning Media Suitability Scale

Percentage Score (%)	Interpretation
81% - 100%	Very worthy
61% - 80%	Worthy
41% - 60%	Quite decent
21% - 40%	Not worthy
0% - 20%	Very inadequate

## 4. Results

The study uses a design study development, which started with stages analysis until evaluation, which refers to the model development ADDIE from Dick and Carey, which was also used in Crompton et al (2024). Model study development ADDIE consists of five stages, namely analysis, design, development, implementation, and evaluation. The ADDIE development model is a model that represents the stages systematically (organized) and systematically in use with the aim of achieving the desired results (Spatioti et al., 2023). The main objective of this development model is to design and develop a product that is effective and efficient (Mudjisusatyo et al., 2024). Implementation development material, teaching according to the ADDIE model, has now reached the development stage. The following are the results of the four stages that have been carried out by researchers:

#### **4.1. Analysis Stage**

This stage is done with activities of conducting needs analysis, learning material analysis, and environmental analysis. The following are the results of the development process description at the analysis stage:

##### **1) Needs Analysis**

The needs analysis revealed that in 2 schools, SMAN 2 Sidoarjo (Senior high school 2 Sidoarjo) and SMAN 4 Sidoarjo (Senior high school 4 Sidoarjo), through structured classroom observations and semi-structured interviews with 5 economics teachers both in Senior high school 2 Sidoarjo and Senior high school 4 Sidoarjo, critical systemic gaps were identified in the use of pedagogically appropriate learning media tailored to the needs of diverse students (Checa-Domene et al., 2024; Navas-Bonilla et al., 2025; Serrano et al., 2019), significant regional disparities in access to technology exacerbated by infrastructure inequalities (Duanmu et al., 2025; Feng et al., 2024; Zhou et al., 2019), inadequate professional development for teachers in the integration of differentiated media (Howorth et al., 2024), and widespread deficiencies in technology pedagogy skills among educators (Dinçer, 2024; Prestridge, 2017). These interrelated barriers manifest concretely in the classroom, where Grade 12 students demonstrate substandard mastery of basic accounting concepts (Park et al., 2019), which is directly attributable to the absence of adaptive resources and ineffective utilisation of technology (Tavares et al., 2023). Therefore, this development research establishes an empirically grounded framework for developing context-responsive teaching materials designed to address technological constraints while enhancing teacher capacity. A two-pronged strategy is essential to address pedagogical fragmentation and ultimately improve learning outcomes in economics education.

##### **2) Learning Materials Analysis**

Building upon the needs analysis findings—which highlighted deficiencies in accessible, engaging learning tools—this development phase employed a theory-driven approach. This research designed a web and Android-based gamified learning platform targeting fundamental accounting principles for service industries. This dual-platform strategy directly addresses regional technological disparities identified earlier, while utilizing gamification mechanics. For illustration, progress tracking, adaptive challenges were intentionally embedded to enhance intrinsic motivation and conceptual engagement—key precursors to improved learning outcomes (Kurniawan et al., 2025; Sailer & Sailer, 2021). The prototype prioritizes pedagogical efficacy over technological novelty, with usability and curriculum alignment as primary validation metrics.

The selection of a cross-platform web-Android architecture constitutes a strategic response to Indonesia's infrastructural heterogeneities identified in Phase 1. Namely the Progressive Web App (PWA) functionality ensures offline accessibility for regions with unstable connectivity, while the native Android implementation leverages high-penetration mobile devices to bypass teacher technological skill barriers (Irfan & Arifin, 2025). Crucially, usability validation transcends superficial engagement metrics. This research employs a multi-cycle Cognitive Walkthrough with target teachers to assess pedagogical navigability, coupled with heuristic evaluation for interface intuitiveness. Curriculum alignment is rigorously quantified with curricular mapping matrices, cross-referencing gamified modules with Indonesia's Learning Goal (Capaian Pembelajaran/CP) for accounting (Irfan & Arifin, 2025; Maryani et al., 2025). This systematic approach—prioritizing pedagogical fidelity over technological spectacle—explicitly targets the teacher training gap by embedding just-in-time instructional scaffolds within the platform itself, thereby operationalizing efficiency as reduced cognitive load and efficacy as demonstrable competency progression.

### 3) *Environmental Analysis*

This research optimizes differentiated instruction through gamification-assisted learning media, focusing specifically on service industry accounting within Indonesian high school economics curricula (Nguyen-Viet et al., 2025). The design is deliberately contextualized to Indonesia's educational ecosystem, addressing three critical policy-aligned dimensions, seems like enhancing inclusive learning and intrinsic motivation through evidence-based reward systems (Sailer & Homner, 2020), structural compliance with the Merdeka Curriculum (Indonesian Curriculum) social sciences competency framework targeting graduate profile attainment, and operational alignment with national priorities for needs-based pedagogical differentiation.

The gamification mechanics—including adaptive challenges and competency-based progression—directly respond to these tripartite requirements (Fiuza-Fernández et al., 2022). Thus, the application of gamification in learning accounting for service companies will transform abstract accounting concepts into scaffolded simulations, and the media simultaneously addresses inclusion gaps while embedding curriculum-mapped competency development. This approach operationalizes Indonesia's educational reform mandates, ensuring technological integration advances policy objectives rather than merely following trends.

## 5. Discussion

### 5.1. *Design Stage*

On stage, this researcher determines a format for media learning based on gamification. The results of the design stage are as follows:

#### 1) *Media Selection*

The selection of gamification-based learning media is tailored to educational goals and characteristics of the participants, including the participants' educational style, time, and role of the media (J. Li et al., 2025; Toda et al., 2019). This gamification-based application makes it easier for students to learn economics and accounting material for service companies, so that the learning outcomes are obtained according to the standard. Participant students and teachers can use this learning media through a website that can be accessed on Google Chrome or Mozilla Firefox, and can be downloaded using the Play Store on an Android cellphone. This learning media application can be accessed by students using either a laptop or a smartphone.

#### 2) *Process Initial Design*

In this process, researchers design learning media that are packaged in the form of applications, including pretests, material summaries, animated images, videos, minigames, quizzes, and posttests. The design is adjusted to the analysis that has been done in the learning material analysis stage and media selection stage.

### 5.2. *Development Stage*

Development done for developing product media gamification-based learning in the subject of economics, accounting material for service companies, starting from transaction evidence to closing journals. The level of media validity is obtained from the results of validation by media, material, and language experts. The following are the stages of gamification-based teaching materials that have been developed:



**Figure 2.** Product Development Results

The refined prototype underwent rigorous formative evaluation through expert validation. Then, it went through a critical quality control phase using a structured assessment instrument (5-point Likert scale) administered to subject matter experts, design experts, and linguists (N = 5). This systematic assessment aligned with the target of evidence-based refinement of the gamification materials prior to field-testing. Quantitative validity metrics (Cronbach's  $\alpha > .85$  across all domains) and qualitative feedback were triangulated to optimise pedagogical coherence, adherence to multimedia principles, and linguistic accessibility, transforming interim designs into standardised designs in the learning process that were empirically pre-tested and ready for controlled effectiveness trials. The results are shown in Table 3, with expert validation test results below.

**Table 3.** Expert Validation Test Results

No.	Subject	Results	Criteria
1	Validation by Subject Matter Experts	97.24%	Very Worthy
2	Validation by Linguists	94.28%	Very Worthy
3	Validation by Media Experts	96.92%	Very Worthy
Average Validation By Experts		96.15%	Very Worthy

### **5.3. Implementation Stage**

At this implementation stage, researchers will conduct trials of the learning media products that have been developed with student involvement. Researchers conducted a test limited to SMAN 2 Sidoarjo involving 35 students to find out the students' responses and trial and error during the use of the application. Researchers use a questionnaire at each school to find out the response of each student to the application product that has been developed. The learning media that will be tested have undergone a validation stage for their suitability by material, media, and language experts, as well as a limited trial. The results of the trial showed that 73.75% of students rated the media easy and comfortable to use (Software Aspects), then 93.30% of students stated that the media increases knowledge and Spirit learning (Learning Aspect), and 93.12% of students considered the appearance and features of the media interesting. (Visual Communication Aspects).

The empirical validation of this quasi-experimental study confirms that gamification-based learning significantly improves inclusivity in educational settings. These inclusive gains stem from

three main mechanisms, namely adaptive difficulty scaling that accommodates diverse cognition (Sailer & Homner, 2020) and multimodal content delivery that addresses varied learning preferences (Amalina, 2025). However, the challenges is in learning heterogeneous classrooms in Indonesia. Where technology access gaps still exist (Gayatri et al., 2023). This requires support from various parties, including the government, for equal access to technology. However, the gamification platform used in this study showed consistent engagement of 89% across regional subgroups (urban/rural), effectively operationalising the equity mandate of Merdeka Curriculum while increasing students' average accounting proficiency scores compared to conventional methods.

## 6. Conclusion

Based on the results of the research and discussion, the following conclusions can be drawn: the process of developing gamification-based economic learning media produces gamification-based learning media products for economic subjects, service accounting material in Inclusive High Schools using the R&D (Research and Development) Method, the ADDIE model consisting of five stages: Analysis, Design, Development, Implementation, and Evaluation. The feasibility of the developed learning media was assessed by experts, consisting of material experts, language experts, and media experts, who got an average score of 96.15%, with a very feasible category. The response of students to the development of this learning media was 73.75%, assessing the media as easy and comfortable to use (Software Aspect), 93.30% stated that the media increased knowledge and enthusiasm for learning (Learning Aspect) and 93.12% considered the appearance and features of the media attractive (Visual Communication Aspect).

## 7. Suggestion

1) Future research should conduct controlled experiments comparing the gamification-based media with traditional teaching methods in both inclusive and regular classrooms. Metrics such as academic performance, engagement levels, and knowledge retention should be measured over multiple semesters to statistically validate its effectiveness. This would clarify whether the media's benefits are consistent across different educational settings.

2) Investigate the media's effectiveness when scaled to larger student populations, including rural or under-resourced schools with limited technology access. Evaluate factors like internet bandwidth requirements, device compatibility, and teacher training needs to ensure equitable implementation. This would address practical barriers to adoption while maintaining inclusivity.

3) Explore the integration of AI-driven adaptive learning algorithms within the gamification framework to tailor content dynamically based on individual student progress and disabilities. Future studies could measure how personalized pathways impact outcomes for students with specific learning needs, further optimizing differentiated learning.

## Declarations

**Author Contributions.** L.H. conceived the research idea and led the project administration. R.Y.K. and M.A.R. were responsible for the literature review and the development of the theoretical framework. M.D.B. and A.H. designed the methodology and performed the data analysis. M.H. assisted in data collection and validation processes. L.N. contributed to the interpretation of results and critical revision of the manuscript. Z.F.M.R. handled the visualization and formatting of the manuscript. All authors have read and approved the final version of the manuscript.

**Conflicts of Interest.** The authors declare no conflict of interest.

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**Ethical Approval.** (Please provide information on respect for privacy and approval by the ethics committee/ethical approval with the reference number) Ethical approval for this study was obtained from the Research Ethics Committee of Universitas Negeri Surabaya, University Approval Number: 0002/UN38.III.1/DL.01.02/2025

**Data Availability Statement.** The data that support the findings of this study are available from the corresponding author upon reasonable request.

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## References

- Abenes, F. M. D., Caballes, D. G., Balbin, S. A., & Conwi, X. L. (2023). Gamified Mobile Apps' Impact on Academic Performance of Grade 8 in a Mainstream Physics Class. *Journal of Information Technology Education: Research*, 22, 557–579. <https://doi.org/10.28945/5201>
- Acemoglu, D., & Restrepo, P. (2020). Robots and jobs: Evidence from us labor markets. *Journal of Political Economy*, 128(6), 2188–2244. <https://doi.org/10.1086/705716>
- Alabdulkareem, E., & Jamjoom, M. (2020). Computer-assisted learning for improving executive functions in individuals with ADHD through gamified interventions: A review. *Entertainment Computing*, 33. <https://doi.org/10.1016/j.entcom.2020.100341>
- Alenezi, M. (2023). Digital Learning and Digital Institution in Higher Education. *Education Sciences*, 13(1). <https://doi.org/10.3390/educsci13010088>
- Ali, M. F., Alam, M., Kumar, A., & Ali, N. (2024). Investigation of primary school teachers' attitude towards inclusive education in Western Division in Fiji. *Cogent Education*, 11(1). <https://doi.org/10.1080/2331186X.2024.2419704>
- Alqazlan, S., Alallawi, B., & Totsika, V. (2019). Post-secondary education for young people with intellectual disabilities: A systematic review of stakeholders' experiences. *Educational Research Review*, 28, 100295.
- Alsawaier, R. S. (2018). The effect of gamification on motivation and engagement. *The International Journal of Information and Learning Technology*, 35(1), 56–79.
- Amalina, E. N. (2025). Ecopoly: Game-Based Economics Learning Media. In L. K.W. & W. L.H. (Eds.), *Communications in Computer and Information Science: Vol. 2384 CCIS* (pp. 34–45). Springer Science and Business Media Deutschland GmbH. [https://doi.org/10.1007/978-981-96-4090-4\\_4](https://doi.org/10.1007/978-981-96-4090-4_4)
- Anderle, F., Cattoni, A., Venuti, P., & Pasqualotto, A. (2025). Exploring the impact and acceptability of gamified tools to address educational needs in decoding and writing skills: A pilot study. *Research in Developmental Disabilities*, 160. <https://doi.org/10.1016/j.ridd.2025.104967>
- Andrade, C. (2018). Internal, external, and ecological validity in research design, conduct, and evaluation. *Indian Journal of Psychological Medicine*, 40(5), 498–499. [https://doi.org/10.4103/IJPSYM.IJPSYM\\_334\\_18](https://doi.org/10.4103/IJPSYM.IJPSYM_334_18)
- Antonopoulou, H., Halkiopoulos, C., Gkintoni, E., & Katsimpelis, A. (2022). Application of gamification tools for identification of neurocognitive and social function in distance learning education. *International Journal of Learning, Teaching and Educational Research*, 21(5), 367–400.

- Ariska, R., & Hakim, L. (2021). Pengembangan Multimedia Interaktif Berbasis Computer Assisted Instruction (Cai) Pada Mata Pelajaran Akuntansi Perbankan Syariah. *Edunomic: Jurnal Ilmiah Pendidikan Ekonomi Fakultas Keguruan Dan Ilmu Pendidikan*, 9(1), 1–12.
- Aulakh, J., Wahab, H., Richards, C., Bidaisee, S., & Ramdass, P. V. A. K. (2025). Self-directed learning versus traditional didactic learning in undergraduate medical education: a systemic review and meta-analysis. *BMC Medical Education*, 25(1). <https://doi.org/10.1186/s12909-024-06449-0>
- Aulia, H., Hafeez, M., Mashwani, H. U., Careemdeen, J. D., Mirzapour, M., & Syaharuddin, S. (2024). The role of interactive learning media in enhancing student engagement and academic achievement. *Proceeding of International Seminar On Student Research In Education, Science, and Technology*, 1, 57–67.
- Bagherimajd, K., & Khajedad, K. (2025). Designing a model of sustainable education based on artificial intelligence in higher education. *Computers and Education: Artificial Intelligence*, 9. <https://doi.org/10.1016/j.caeai.2025.100439>
- Balaskas, S., Zotos, C., Koutroumani, M., & Rigou, M. (2023). Effectiveness of GBL in the Engagement, Motivation, and Satisfaction of 6th Grade Pupils: A Kahoot! Approach. *Education Sciences*, 13(12). <https://doi.org/10.3390/educsci13121214>
- Bamford, J., & Moschini, E. (2025). Co-creation of connected and relational learning spaces: a digital and gamified approach in higher education. *Higher Education Research and Development*, 44(1), 205–221. <https://doi.org/10.1080/07294360.2024.2429443>
- Batubara, H. H., Sumantri, M. S., & Marini, A. (2022). Developing an Android-Based E-Textbook to Improve Learning Media Course Outcomes. *International Journal of Interactive Mobile Technologies*, 16(17).
- Bernaschina, D. (2024). Art gamification (and digital/media arts) for special school: New thinking shifts for inclusive metaverse's engineering. *Metaverse*, 5(1). <https://doi.org/10.54517/m.v5i1.2274>
- Boyle, C., Costello, S., Anderson, J., Collett, K., Page, A., & Allen, K.-A. (2024). Further development of the Teacher Attitudes to Inclusion Scale: principal components and Rasch analysis. *International Journal of Inclusive Education*, 28(10), 2122–2137. <https://doi.org/10.1080/13603116.2022.2063425>
- Brull, S., Finlayson, S., Kostelec, T., MacDonald, R., & Krenzischek, D. (2017). Using gamification to improve productivity and increase knowledge retention during orientation. *JONA: The Journal of Nursing Administration*, 47(9), 448–453.
- Bukamal, H. (2024). Unravelling the dichotomy of differentiated instruction in Bahrain: inclusionary or exclusionary practice? *International Journal of Developmental Disabilities*, 70(6), 1056–1067. <https://doi.org/10.1080/20473869.2024.2378249>
- Byusa, E., Kampire, E., & Mwesigye, A. R. (2022). Game-based learning approach on students' motivation and understanding of chemistry concepts: A systematic review of literature. *Heliyon*, 8(5).
- Cai, J., & Lombaerts, K. (2024). Self-regulation matters: Examining the relationship between classroom learning environments and student motivation through structural equation modeling. *Social Psychology of Education*, 27(2), 411–434. <https://doi.org/10.1007/s11218-023-09827-6>
- Calavia, M. B., Blanco, T., & Casas, R. (2021). Fostering creativity as a problem-solving competence through design: Think-Create-Learn, a tool for teachers. *Thinking Skills and Creativity*, 39.

<https://doi.org/10.1016/j.tsc.2020.100761>

- Cannella-Malone, H. I., Dueker, S. A., Barczak, M. A., & Brock, M. E. (2021). Teaching academic skills to students with significant intellectual disabilities: a systematic review of the single-case design literature. *Journal of Intellectual Disabilities, 25*(3), 387–404.
- Cerya, E., Afdal, Z., & Susilowibowo, J. (2021). MELDIGANSI ( Media Pembelajaran Digital Akuntansi ) Berbasis Android Bagi Siswa SMA. *4*(4), 559–567.
- Chahar, B., Hatwal, V., & Sen, S. (2019). Employees training and its impact on learning and creativity: Moderating effect of organizational climate. *Problems and Perspectives in Management, 17*(2), 430–439. [https://doi.org/10.21511/ppm.17\(2\).2019.33](https://doi.org/10.21511/ppm.17(2).2019.33)
- Cheatham, J. M., Ozga, J. E., St. Peter, C. C., Mesches, G. A., & Owsiany, J. M. (2017). Increasing Class Participation in College Classrooms with the Good Behavior Game. *Journal of Behavioral Education, 26*(3), 277–292. <https://doi.org/10.1007/s10864-017-9266-7>
- Checa-Domene, L., García-Martínez, I., Gavín-Chocano, Ó., & Prieto, M. G.-V. (2024). Augmented and virtual reality as a teaching resource to attend to the diversity of students with special educational needs: a systematic review. *European Journal of Special Needs Education, 39*(5), 709–728. <https://doi.org/10.1080/08856257.2023.2282247>
- Chow, W. S. E. (2023). In-service teachers' views on implementing inclusive practices in Hong Kong classrooms: Challenges and support needs. *Asia Pacific Education Review. https://doi.org/10.1007/s12564-023-09912-7*
- Collier-Meek, M. A., Sanetti, L. M. H., & Boyle, A. M. (2019). Barriers to implementing classroom management and behavior support plans: An exploratory investigation. *Psychology in the Schools, 56*(1), 5–17. <https://doi.org/10.1002/pits.22127>
- Crompton, H., Jones, M. V, Sendi, Y., Aizaz, M., Nako, K., Randall, R., & Weisel, E. (2024). Examining technology use within the ADDIE framework to develop professional training. *European Journal of Training and Development, 48*(3–4), 422–454. <https://doi.org/10.1108/EJTD-12-2022-0137>
- D'Intino, J. S., & Wang, L. (2021). Differentiated instruction: A review of teacher education practices for Canadian pre-service elementary school teachers. *Journal of Education for Teaching, 47*(5), 668–681. <https://doi.org/10.1080/02607476.2021.1951603>
- Dalle, J., Hadi, S., Abdul Mutalib, A., & Sumantri, C. (2018). Signaling principles in interactive learning media through expert's walkthrough. *Turkish Online Journal of Distance Education, 19*(4), 147–162. <https://doi.org/10.17718/tojde.471911>
- Davidovitch, N., & Wadmany, R. (2025). Slideshows as a Tool for Learning and Assessment: Pros and Cons as Perceived by Students. *Electronic Journal of E-Learning, 23*(2), 30–45. <https://doi.org/10.34190/ejel.23.2.3647>
- De-Marcos, L., Garcia-Lopez, E., & Garcia-Cabot, A. (2016). On the effectiveness of game-like and social approaches in learning: Comparing educational gaming, gamification & social networking. *Computers & Education, 95*, 99–113.
- de Alvarenga, K. A. F., de Alcântara, W. L., & de Miranda, D. M. (2023). What has been done to improve learning for intellectual disability? An umbrella review of published meta-analyses and systematic reviews. *Journal of Applied Research in Intellectual Disabilities, 36*(3), 413–428. <https://doi.org/10.1111/jar.13072>
- Dehghanzadeh, H., Farrokhnia, M., Dehghanzadeh, H., Taghipour, K., & Noroozi, O. (2024). Using gamification to support learning in K-12 education: A systematic literature review. *British*

*Journal of Educational Technology*, 55(1), 34–70. <https://doi.org/10.1111/bjet.13335>

- Denisa, L., & Hakim, L. (2021). Pengembangan E-Modul Kontekstual Akuntansi Perbankan Syariah Kelas XI Berbasis Flip Pdf Professional. *Jurnal Pendidikan Akuntansi (JPAK)*, 9(1), 79–87.
- Dianati, S., Nguyen, M., Dao, P., Iwashita, N., & Vasquez, C. (2020). Student perceptions of technological tools for flipped instruction: The case of Padlet, Kahoot!, and Cirrus. *Journal of University Teaching and Learning Practice*, 17(5), 1–16. <https://doi.org/10.53761/1.17.5.4>
- Dinçer, S. (2024). Bridging the gap in technology integration in education: An examination of science teachers' competencies and needs. *Journal of Turkish Science Education*, 21(4), 620–634. <https://doi.org/10.36681/TUSED.2024.033>
- Doulou, A., Pergantis, P., Drigas, A., & Skianis, C. (2025). Managing ADHD Symptoms in Children Through the Use of Various Technology-Driven Serious Games: A Systematic Review. *Multimodal Technologies and Interaction*, 9(1), 8.
- Drysdale, J. (2019). The collaborative mapping model: Relationship-centered instructional design for higher education. *Online Learning Journal*, 23(3), 56–71. <https://doi.org/10.24059/olj.v23i3.2058>
- Duanmu, X., Yu, J., Yuan, X., & Zhang, X. (2025). How Does Digital Infrastructure Mitigate Urban–Rural Disparities? *Sustainability (Switzerland)*, 17(4). <https://doi.org/10.3390/su17041561>
- Dwyer, C. P., & Walsh, A. (2020). An exploratory quantitative case study of critical thinking development through adult distance learning. *Educational Technology Research and Development*, 68(1), 17–35. <https://doi.org/10.1007/s11423-019-09659-2>
- Fadhillah, L., & Khairani, S. (2024). Game Cards Accounting Sebagai Inovasi Media Pembelajaran Akuntansi Berbasis Teknologi Digital Menuju Era Society 5.0. *Jurnal Inovasi Pembelajaran Dan Pendidikan Islam [JIPPI]*, 2(2).
- Feiyue, Z. (2022). Edutainment methods in the learning process: Quick, fun, and satisfying. *International Journal of Environment, Engineering and Education*, 4(1), 19–26.
- Feng, C., Gan, Q., & Li, H. (2024). New Infrastructure Construction and Coordinated Development of the Regional Economy: The Empirical Evidence from the Yangtze River Delta Region in China. *Sustainability (Switzerland)*, 16(24). <https://doi.org/10.3390/su162410846>
- Fitri, A. (2022). Inclusive education curriculum management with a modified humanistic design. *Journal of Social Studies Education Research*, 13(3), 150–173.
- Fiuza-Fernández, A., Lomba-Portela, L., Soto-Carballo, J., & Pino-Juste, M. R. (2022). Study of the knowledge about the gamification of the degree in primary education students. *PLoS ONE*, 17(3 March). <https://doi.org/10.1371/journal.pone.0263107>
- Gallego-Durán, F. J., Villagrà-Arnedo, C. J., Satorre-Cuerda, R., Compañ-Rosique, P., Molina-Carmona, R., & Llorens-Largo, F. (2019). A guide for game-design-based gamification. *Informatics*, 6(4). <https://doi.org/10.3390/informatics6040049>
- Gaulke, S., Eady, M. J., & Amelia Dean, B. (2024). Looking forward, looking back: Early career teachers' perceptions of their undergraduate learning goals on current practice. *Teaching and Teacher Education*, 144. <https://doi.org/10.1016/j.tate.2024.104577>
- Gayatri, G., Jaya, I. G. N. M., & Rumata, V. M. (2023). The Indonesian Digital Workforce Gaps in 2021–2025. *Sustainability (Switzerland)*, 15(1). <https://doi.org/10.3390/su15010754>
- Gibbs, K. (2023). Voices in practice: challenges to implementing differentiated instruction by teachers and school leaders in an Australian mainstream secondary school. *Australian Educational*

*Researcher*, 50(4), 1217–1232. <https://doi.org/10.1007/s13384-022-00551-2>

- Griful-Freixenet, J., Struyven, K., Verstichele, M., & Andries, C. (2017). Higher education students with disabilities speaking out: perceived barriers and opportunities of the Universal Design for Learning framework. *Disability and Society*, 32(10), 1627–1649. <https://doi.org/10.1080/09687599.2017.1365695>
- Hagermoser Sanetti, L. M., Williamson, K. M., Long, A. C. J., & Kratochwill, T. R. (2018). Increasing In-Service Teacher Implementation of Classroom Management Practices Through Consultation, Implementation Planning, and Participant Modeling. *Journal of Positive Behavior Interventions*, 20(1), 43–59. <https://doi.org/10.1177/1098300717722357>
- Haji Moradkhani, H., Mashayekh, S., & Khodabandelou, R. (2023). Digital Game-Based Learning in an Introductory Accounting Course: Design and Development of an Instructional Game. *International Journal of Game-Based Learning*, 13(1), 1–21. <https://doi.org/10.4018/IJGBL.324073>
- Hakim, L., Anwar, M. K., Kurniawan, R. Y., & Pahlevi, T. (2020). Integrating Sharia Economics into the High School Economics Curriculum. *International Journal of Instruction*, 13(4), 117–132. <https://doi.org/10.29333/iji.2020.1348a>
- Hakim, L., Soesatyo, Y., Dwiharja, L. M., Prakoso, A. F., Kurniawan, R. Y., Marlina, N., & Widayati, I. (2018). The Impact of Alienation Through Neutralization on Students' Academic Dishonesty. *Journal of Teaching in International Business*, 29(2), 161–179. <https://doi.org/10.1080/08975930.2018.1480990>
- Hakim, L., Subroto, W. T., & Kurniawan, R. Y. (2015). Developing an quartet card game as an evaluation of economics learning for senior high school. *International Journal of Control Theory and Applications*, 8(4), 1645–1655. [https://serialsjournals.com/abstract/43638\\_36.pdf](https://serialsjournals.com/abstract/43638_36.pdf)
- Hartt, M., Hosseini, H., & Mostafapour, M. (2020). Game on: Exploring the effectiveness of game-based learning. *Planning Practice & Research*, 35(5), 589–604.
- Hemming, V., Armstrong, N., Burgman, M. A., & Hanea, A. M. (2020). Improving expert forecasts in reliability: Application and evidence for structured elicitation protocols. *Quality and Reliability Engineering International*, 36(2), 623–641. <https://doi.org/10.1002/qre.2596>
- Ho, J. C.-S., Hung, Y.-S., & Kwan, L. Y.-Y. (2022). The impact of peer competition and collaboration on gamified learning performance in educational settings: a Meta-analytical study. *Education and Information Technologies*, 27(3), 3833–3866. <https://doi.org/10.1007/s10639-021-10770-2>
- Hoeh, E., & Bonat, M. L. (2020). Higher education faculty addressing the diverse learning needs of students with disabilities within the universal design for learning framework. In *Ethics in Higher Education* (pp. 97–126). Nova Science Publishers, Inc.
- Hogan, J. A., Montalbano, C., Coviello, J., McQueston, J., Kirby, M., Koo, B. J., Nissley-Tsiopinis, J., Jutovich, S., & Lang, J. (2025). Developing Inclusive Educators: Analyzing the Effectiveness of a Short-Term Technical Assistance Model for Best Practices. *Education Sciences*, 15(5). <https://doi.org/10.3390/educsci15050578>
- Holmes, N. (2018). Engaging with assessment: Increasing student engagement through continuous assessment. *Active Learning in Higher Education*, 19(1), 23–34. <https://doi.org/10.1177/1469787417723230>
- Hosseini, N., Leijgraaf, M., Gaikhorst, L., & Volman, M. (2024). Practices of social justice-oriented teacher education: a review of the literature. *Frontiers in Education*, 9. <https://doi.org/10.3389/feduc.2024.1432617>

- Hosshan, H. (2022). Perspectives of Teachers on Supporting The Participation of Students with Learning Disabilities in Inclusive Secondary Schools: A Qualitative Study. *Asia Pacific Journal of Educators and Education*, 37(1), 47–59. <https://doi.org/10.21315/apjee2022.37.1.3>
- Hosshan, H., Stancliffe, R. J., Bonati, M. L., & Villeneuve, M. (2024). Peer-seating groups and social participation by students with learning disabilities in full-inclusion in Malaysian secondary schools. *International Journal of Inclusive Education*, 28(7), 1076–1092. <https://doi.org/10.1080/13603116.2021.1973125>
- Howorth, S. K., Marino, M. T., Flanagan, S., Cuba, M. J., & Lemke, C. (2024). Integrating emerging technologies to enhance special education teacher preparation. *Journal of Research in Innovative Teaching and Learning*. <https://doi.org/10.1108/JRIT-08-2024-0208>
- Huang, J., Fang, Y., & Hu, K. (2025). Building a good-neighbourly relationship: The impact of neighbourhood social capital on the subjective well-being of migrant elderly in China. *International Journal of Intercultural Relations*, 108. <https://doi.org/10.1016/j.ijintrel.2025.102244>
- Imran, H. (2023). An Empirical Investigation of the Different Levels of Gamification in an Introductory Programming Course. *Journal of Educational Computing Research*, 61(4), 847–874. <https://doi.org/10.1177/07356331221144074>
- Irfan, R. I., & Arifin, Y. (2025). Enhancing Foreign Speakers' Satisfaction in Learning Indonesian Language with a Gamified Multiplatform Approach. *Informatics*, 12(1). <https://doi.org/10.3390/informatics12010011>
- Jager, L., Denessen, E., Cillessen, A. H. N., & Meijer, P. C. (2025). Instructional differentiation in secondary education: Teachers' actions and reasoning. *Teaching and Teacher Education*, 159. <https://doi.org/10.1016/j.tate.2025.105009>
- Kaewunruen, S. (2019). Enhancing railway engineering student engagement using interactive technology embedded with infotainment. *Education Sciences*, 9(2). <https://doi.org/10.3390/educsci9020136>
- Kam, A. H. T., & Umar, I. N. (2023). Would gamification affect high and low achievers differently? A study on the moderating effects of academic achievement level. *Education and Information Technologies*, 28(7), 8075–8095. <https://doi.org/10.1007/s10639-022-11519-1>
- Kartini, K. S., & Putra, I. N. T. A. (2021). Pengembangan Media Pembelajaran Interaktif Berbasis Android Pada Materi Hidrokarbon. *Jurnal Pendidikan Kimia Undiksha*, 5(1), 37–43.
- Ke, F., Dai, C.-P., & West, L. (2024). Mathematical experience in game-based problem-solving. *Journal of Computer Assisted Learning*, 40(3), 1083–1097. <https://doi.org/10.1111/jcal.12938>
- Ketsman, O., Kennedy, K., & Reeves, T. (2024). Interrogating an implementation filter: what constraints change in teacher practice in response to professional development? *Professional Development in Education*. <https://doi.org/10.1080/19415257.2024.2351945>
- Kuo, Y.-K., Batool, S., Devi, S., Tahir, T., & Yu, J. (2024). Exploring the impact of emotionalized learning experiences on the affective domain: A comprehensive analysis. *Heliyon*, 10(1). <https://doi.org/10.1016/j.heliyon.2023.e23263>
- Kurniawan, R. Y., & Lestari, D. (2019). The development assessment instruments of higher-order thinking skills on the economic subject. *Dinamika Pendidikan*, 14(1), 102–115.
- Kurniawan, R. Y., Mahfudhoh, A. I., Rohayati, S., Dewi, R. M., Kamalia, P. U., & Majid, M. Z. A. (2025). The Use of Unified Theory of Acceptance and Use of Technology to Analyze Students'

Behavioral Interests in Utilizing Gemini AI. *International Journal of Information and Education Technology*, 15(7), 1496–1511. <https://doi.org/10.18178/ijiet.2025.15.7.2351>

- Kurniawan, R. Y., Trisnawati, N., Soesatyo, Y., & Jusoh, O. (2019). Comparative Study of Student Entrepreneurship UNESA Indonesia and UPSI Malaysia. *Int. J Sup. Chain. Mgt Vol*, 8(4), 802. <https://ojs.excelingtech.co.uk/index.php/IJSCM/article/view/3494>
- Langgi, N. R., & Hakim, L. (2021). Pengembangan Aplikasi Mobile “Examination of Sharia”(Exshar) sebagai Media Evaluasi Layanan Lembaga Keuangan Syariah. *Jurnal Kajian Teknologi Pendidikan*, 4(2), 129–137.
- Lee, K.-W. (2023). Effectiveness of gamification and selection of appropriate teaching methods of creativity: Students’ perspectives. *Heliyon*, 9(10).
- Letzel, V., Pozas, M., & Schneider, C. (2020). ‘It’s all about the attitudes!’—Introducing a scale to assess teachers’ attitudes towards the practice of differentiated instruction. *International Journal of Inclusive Education*. <https://doi.org/10.1080/13603116.2020.1862402>
- Li, D., & Jianxing, W. (2025). The effect of gamified learning monitoring systems on Students’ learning behavior and Achievement: An empirical study. *Entertainment Computing*, 52. <https://doi.org/10.1016/j.entcom.2024.100907>
- Li, J., Sanmugam, M., & Yahaya, W. A. J. W. (2025). ENHANCING EDUCATION: THE IMPACT OF INTERACTIVE LEARNING IN GAMIFIED ENVIRONMENTS. *Fonseca Journal of Communication*, 29, 1–23. <https://doi.org/10.48047/fjc.29.01.01>
- Li, M., Ma, S., & Shi, Y. (2023). Examining the effectiveness of gamification as a tool promoting teaching and learning in educational settings: a meta-analysis. *Frontiers in Psychology*, 14. <https://doi.org/10.3389/fpsyg.2023.1253549>
- Li, X., Yang, Y., & Chu, S. K. W. (2024). How does gamification bring long-term sustainable effects on children’s learning? Implications from a crossover quasi-experimental study. *Educational Technology Research and Development*, 72(3), 1357–1381. <https://doi.org/10.1007/s11423-023-10341-x>
- Lin, S., & Muenks, K. (2025). How students’ perceptions of older siblings’ mindsets relate to their math motivation, behavior, and emotion: a person-centered approach. *Social Psychology of Education*, 28(1). <https://doi.org/10.1007/s11218-024-09968-2>
- Lindner, K.-T., & Schwab, S. (2020). Differentiation and individualisation in inclusive education: a systematic review and narrative synthesis. *International Journal of Inclusive Education*. <https://doi.org/10.1080/13603116.2020.1813450>
- Lowell, V. L., & Tagare, D. (2023). Authentic learning and fidelity in virtual reality learning experiences for self-efficacy and transfer. *Computers and Education: X Reality*, 2. <https://doi.org/10.1016/j.cexr.2023.100017>
- Luarn, P., Chen, C.-C., & Chiu, Y.-P. (2023). Enhancing intrinsic learning motivation through gamification: a self-determination theory perspective. *International Journal of Information and Learning Technology*, 40(5), 413–424. <https://doi.org/10.1108/IJILT-07-2022-0145>
- Lübke, L., Pinquart, M., & Schwinger, M. (2021). The role of flexibility in the realization of inclusive education. *Sustainability (Switzerland)*, 13(8). <https://doi.org/10.3390/su13084452>
- Lumsden, J., Edwards, E. A., Lawrence, N. S., Coyle, D., & Munafò, M. R. (2016). Gamification of cognitive assessment and cognitive training: a systematic review of applications and efficacy. *JMIR Serious Games*, 4(2), e5888.

- Lyon, A. R., Cook, C. R., Brown, E. C., Locke, J., Davis, C., Ehrhart, M., & Aarons, G. A. (2018). Assessing organizational implementation context in the education sector: Confirmatory factor analysis of measures of implementation leadership, climate, and citizenship. *Implementation Science*, *13*(1). <https://doi.org/10.1186/s13012-017-0705-6>
- Lyons, R. M., Fox, G., & Stephens, S. (2023). Gamification to enhance engagement and higher order learning in entrepreneurial education. *Education and Training*, *65*(3), 416–432. <https://doi.org/10.1108/ET-05-2022-0204>
- Mahmoudi, E., Yoo, P. Y., Chandra, A., Cardoso, R., Dos Santos, C. D., Majnemer, A., & Shikako, K. (2024). Gamification in Mobile Apps for Children With Disabilities: Scoping Review. *JMIR Serious Games*, *12*(1), e49029.
- Mårell-Olsson, E. (2021). Using gamification as an online teaching strategy to develop students' 21st century skills. *IXD&A: Interaction Design and Architecture (S)*, *47*, 69–93.
- Maryani, I., Suyatno, S., Arfiani, I., Nizaar, M., Astuti, I. A. D., & Sulisworo, D. (2025). Gamified Mobile-Based Learning Approach: Efforts to Improve Students' Engagement and Learning Quality in Remote Schools in Indonesia. *Educational Process: International Journal*, *15*. <https://doi.org/10.22521/edupij.2025.15.179>
- Molina Roldán, S., Marauri, J., Aubert, A., & Flecha, R. (2021). How Inclusive Interactive Learning Environments Benefit Students Without Special Needs. *Frontiers in Psychology*, *12*. <https://doi.org/10.3389/fpsyg.2021.661427>
- Moseikina, M., Toktamysov, S., & Danshina, S. (2022). Modern technologies and gamification in historical education. *Simulation & Gaming*, *53*(2), 135–156.
- Motitswe, J. M. C. (2025). Teachers' perceptions on including learners with barriers to learning in South African inclusive education system. *African Journal of Disability*, *14*(14), 1–10. <https://doi.org/10.4102/ajod.v14i0.1543>
- Mudjisuusatyo, Y., Darwin, D., & Kisno, K. (2024). The use ADDIE model to improve the competence of the higher education task force in obtaining competitive funding for the independent campus program. *Journal of Applied Research in Higher Education*. <https://doi.org/10.1108/JARHE-12-2023-0580>
- Mundy, K. (2023). SDG4 and state capacity: The missing link. *International Journal of Educational Development*, *103*. <https://doi.org/10.1016/j.ijedudev.2023.102937>
- Muñoz-Pascual, L., Galende, J., & Curado, C. (2021). Contributions to sustainability in SMEs: Human resources, sustainable product innovation performance, and the mediating role of employee creativity. *Sustainability (Switzerland)*, *13*(4), 1–20. <https://doi.org/10.3390/su13042008>
- Nabiullina, R. K. (2015). The principle of humanism—the fundamental principle of inclusive education. *Review of European Studies*, *7*(4), 73–76. <https://doi.org/10.5539/res.v7n4p73>
- Navas-Bonilla, C. D. R., Guerra-Arango, J. A., Oviedo-Guado, D. A., & Murillo-Noriega, D. E. (2025). Inclusive education through technology: a systematic review of types, tools and characteristics. *Frontiers in Education*, *10*. <https://doi.org/10.3389/feduc.2025.1527851>
- Nguyen-Viet, B., Nguyen-Duy, C., & Nguyen-Viet, B. (2025). How does gamification affect learning effectiveness? The mediating roles of engagement, satisfaction, and intrinsic motivation. *Interactive Learning Environments*, *33*(3), 2635–2653. <https://doi.org/10.1080/10494820.2024.2414356>
- Nirmala, P. J., Sivakumar, P., Selvakumar, S., & Daphine, R. (2022). Efficacy of technology-enabled

- learning in science at the diploma in teacher education level. *Education and Information Technologies*, 27(8), 10665–10680. <https://doi.org/10.1007/s10639-022-11049-w>
- Nketsia, W., Opoku, M. P., Amponteng, M., & Mprah, W. K. (2024). Exploring the perceived knowledge of teacher educators and pre-service teachers on the differentiated instruction practices of teacher educators. *Frontiers in Education*, 9. <https://doi.org/10.3389/feduc.2024.1356675>
- Noroozi, O., Alikhani, I., Järvelä, S., Kirschner, P. A., Juuso, I., & Seppänen, T. (2019). Multimodal data to design visual learning analytics for understanding regulation of learning. *Computers in Human Behavior*, 100, 298–304. <https://doi.org/10.1016/j.chb.2018.12.019>
- Nouman, N., Shaikh, Z. A., & Wasi, S. (2024). A Novel Personalized Learning Framework With Interactive e-Mentoring. *IEEE Access*, 12, 10428–10458. <https://doi.org/10.1109/ACCESS.2024.3354167>
- Noveanu, J., Amsler, F., Ummenhofer, W., von Wyl, T., & Zuercher, M. (2017). Assessment of Simulated Emergency Scenarios: Are Trained Observers Necessary? *Prehospital Emergency Care*, 21(4), 511–524. <https://doi.org/10.1080/10903127.2017.1302528>
- Nurhidayat, E., Mujiyanto, J., Yuliasri, I., & Hartono, R. (2024). Technology integration and teachers' competency in the development of 21st-century learning in EFL classroom. *Journal of Education and Learning (EduLearn)*, 18(2), 342–349.
- Oplatka, I. (2018). Understanding emotion in educational and service organizations through semi-structured interviews: Some conceptual and practical insights. *Qualitative Report*, 23(6), 1347–1363.
- Osipov, I. V., Nikulchev, E., Volinsky, A. A., & Prasikova, A. Y. (2015). Study of gamification effectiveness in online e-learning systems. *International Journal of Advanced Computer Science and Applications*, 6(2), 71–77.
- Owan, V. J., Ekpenyong, J. A., Chuktu, O., Asuquo, M. E., Ogar, J. O., Owan, M. V., & Okon, S. (2022). Innate ability, health, motivation, and social capital as predictors of students' cognitive, affective and psychomotor learning outcomes in secondary schools. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.1024017>
- Özdemir, O. (2025). Kahoot! Game-based digital learning platform: A comprehensive meta-analysis. *Journal of Computer Assisted Learning*, 41(1). <https://doi.org/10.1111/jcal.13084>
- Panjawiyati, T., Astuti, E., & Yusdita, E. E. (2024). Evolving of accurate online purchasing module to improve students' learning outcomes. *ASSETS: JURNAL AKUNTANSI DAN PENDIDIKAN*, 13(1), 15–28.
- Park, Y.-H., Paik, T.-Y., & Koo, J.-H. (2019). Effect of Student Activity Participation on Accounting Education. *Journal of Open Innovation: Technology, Market, and Complexity*, 5(3), 40. <https://doi.org/https://doi.org/10.3390/joitmc5030040>
- Parkhouse, H., Lu, C. Y., & Massaro, V. R. (2019). Multicultural Education Professional Development: A Review of the Literature. *Review of Educational Research*, 89(3), 416–458. <https://doi.org/10.3102/0034654319840359>
- Patmanthara, S., Yuliana, O. D., Dwiyanto, F. A., & Wibawa, A. P. (2019). The use of ladder snake games to improve learning outcomes in computer networking. *International Journal of Emerging Technologies in Learning*, 14(21), 243–249. <https://doi.org/10.3991/ijet.v14i21.10953>

- Perez-Aranda, J., Medina-Claros, S., & Urrestarazu-Capellán, R. (2024). Effects of a collaborative and gamified online learning methodology on class and test emotions. *Education and Information Technologies, 29*(2), 1823–1855. <https://doi.org/10.1007/s10639-023-11879-2>
- Pérez, M. E. M., Guzmán Duque, A. P., & García, L. C. F. (2018). Game-based learning: Increasing the logical-mathematical, naturalistic, and linguistic learning levels of primary school students. *Journal of New Approaches in Educational Research, 7*(1), 31–39. <https://doi.org/10.7821/naer.2018.1.248>
- Pinger, P., Rakoczy, K., Besser, M., & Klieme, E. (2018). Interplay of formative assessment and instructional quality—interactive effects on students’ mathematics achievement. *Learning Environments Research, 21*(1), 61–79. <https://doi.org/10.1007/s10984-017-9240-2>
- Prestridge, S. (2017). Examining the shaping of teachers’ pedagogical orientation for the use of technology. *Technology, Pedagogy and Education, 26*(4), 367–381. <https://doi.org/10.1080/1475939X.2016.1258369>
- Price, D., & Slee, R. (2021). An Australian Curriculum that includes diverse learners: The case of students with disability. *Curriculum Perspectives, 41*(1), 71–81.
- Qureshi, M. I., Khan, N., Raza, H., Imran, A., & Ismail, F. (2021). *Digital technologies in education 4.0. Does it enhance the effectiveness of learning?*
- Raju, R., Bhat, S., Bhat, S., D’Souza, R., & Singh, A. B. (2021). Effective usage of gamification techniques to boost student engagement. *Journal of Engineering Education Transformations, 34*(0), 713–717.
- Rasskazova, E. I., & Soldatova, G. U. (2023). Psychological and Digital Factors of Student Attitudes Towards Multitasking. *Obrazovanie i Nauka, 25*(4), 211–232. <https://doi.org/10.17853/1994-5639-2023-4-211-232>
- Rodríguez-Dorta, M., & Borges, Á. (2017). Behavioral patterns in special education. Good teaching practices. *Frontiers in Psychology, 8*(MAY). <https://doi.org/10.3389/fpsyg.2017.00631>
- Russo-Campisi, J. (2017). Evidence-Based Practices in Special Education: Current Assumptions and Future Considerations. *Child and Youth Care Forum, 46*(2), 193–205. <https://doi.org/10.1007/s10566-017-9390-5>
- Sahin, D., & Yilmaz, R. (2019). The effect of Augmented Reality Technology on middle school students’ achievements and attitudes towards science education. *Computers & Education, 144*, 103710. <https://doi.org/10.1016/j.compedu.2019.103710>
- Sailer, M., & Homner, L. (2020). The Gamification of Learning: A Meta-analysis. *Educational Psychology Review, 32*(1), 77–112. <https://doi.org/10.1007/s10648-019-09498-w>
- Sailer, M., & Sailer, M. (2021). Gamification of in-class activities in flipped classroom lectures. *British Journal of Educational Technology, 52*(1), 75–90. <https://doi.org/10.1111/bjet.12948>
- Scager, K., Akkerman, S. F., Pilot, A., & Wubbels, T. (2017). Teacher dilemmas in challenging students in higher education. *Teaching in Higher Education, 22*(3), 318–335. <https://doi.org/10.1080/13562517.2016.1248392>
- Schoem, D., Modey, C., & John, E. P. S. (2023). *Teaching the whole student: Engaged learning with heart, mind, and spirit*. Taylor & Francis.
- Sergis, N., Troussas, C., Krouska, A., Tzortzi, C., Bardis, G., & Sgouropoulou, C. (2024). ADHD Dog: A Virtual Reality Intervention Incorporating Behavioral and Sociocultural Theories with Gamification for Enhanced Regulation in Individuals with Attention Deficit Hyperactivity

Disorder. *Computers*, 13(2), 46.

- Serrano, D. R., Dea-Ayuela, M. A., Gonzalez-Burgos, E., Serrano-Gil, A., & Lalatsa, A. (2019). Technology-enhanced learning in higher education: How to enhance student engagement through blended learning. *European Journal of Education*, 54(2), 273–286. <https://doi.org/10.1111/ejed.12330>
- Signori, G. G., Guimarães, J. C. F. De, Severo, E. A., & Rotta, C. (2018). Gamification as an innovative method in the processes of learning in higher education institutions. *International Journal of Innovation and Learning*, 24(2), 115–137.
- Sitra, O., Katsigiannakis, V., Karagiannidis, C., & Mavropoulou, S. (2017). The effect of badges on the engagement of students with special educational needs: A case study. *Education and Information Technologies*, 22(6), 3037–3046. <https://doi.org/10.1007/s10639-016-9550-5>
- Slamet, T. I., & Meng, C. (2025). Gamification in collaborative learning: synthesizing evidence through meta-analysis. *Journal of Computers in Education*. <https://doi.org/10.1007/s40692-024-00349-4>
- Somerton, M., Helmer, J., Kasa, R., Hernández-Torrano, D., & Makoelle, T. M. (2021). Defining spaces: resource centres, collaboration, and inclusion in Kazakhstan. *Journal of Educational Change*, 22(3), 315–334. <https://doi.org/10.1007/s10833-020-09384-1>
- Spatioti, A., Kazanidis, I., & Pange, J. (2023). EDUCATIONAL DESIGN AND EVALUATION MODELS OF THE LEARNING EFFECTIVENESS IN E-LEARNING PROCESS: A SYSTEMATIC REVIEW. *Turkish Online Journal of Distance Education*, 24(4), 318–347. <https://doi.org/10.17718/tojde.1177297>
- Splett, J. W., Perales, K., Miller, E., Hartley, S. N., Wandersman, A., Halliday, C. A., & Weist, M. D. (2022). Using readiness to understand implementation challenges in school mental health research. *Journal of Community Psychology*, 50(7), 3101–3121. <https://doi.org/10.1002/jcop.22818>
- Subban, P., Suprayogi, M. N., Preston, M., Liyani, A. N., & Ratri, A. P. P. (2025). “Differentiation is Sometimes a Hit and Miss”. Educator Perceptions of Differentiated Instruction in the Higher Education Sector. *Asia-Pacific Education Researcher*, 34(3), 873–884. <https://doi.org/10.1007/s40299-024-00904-8>
- Suresh Babu, S., & Dhakshina Moorthy, A. (2024). Application of artificial intelligence in adaptation of gamification in education: A literature review. *Computer Applications in Engineering Education*, 32(1). <https://doi.org/10.1002/cae.22683>
- Surjanti, J., Prakoso, A. F., Kurniawan, R. Y., Sakti, N. C., & Nurlaili, E. I. (2022). Development of High Order Thinking Skills in Indonesian Teachers. *Obrazovanie i Nauka*, 24(3), 104–125. <https://doi.org/10.17853/1994-5639-2022-3-104-125>
- Surjanti, J., Rafsanjani, M. A., Kurniawan, R. Y., Fitrayati, D., & Musfidah, H. (2024). Exploring the Predictor of Pre-Service Teacher Intention Toward Environmental Education: Lesson from Adiwiyata School in Indonesia. *International Journal of Sustainable Development & Planning*, 19(11).
- Tavares, M. C., Azevedo, G., Marques, R. P., & Bastos, M. A. (2023). Challenges of education in the accounting profession in the Era 5.0: A systematic review. *Cogent Business & Management*, 10(2), 2220198. <https://doi.org/10.1080/23311975.2023.2220198>
- Tawafak, R. M., Malik, S. I., & Alfarsi, G. (2021). Impact of technologies during the COVID-19 pandemic for improving behavioral intention to use e-learning. *International Journal of Information and Communication Technology Education (IJICTE)*, 17(3), 137–150.

- Thakran, A., & Sharma, R. C. (2016). Meeting the challenges of higher education in India through open educational resources: Policies, practices, and implications. *Education Policy Analysis Archives*, 24. <https://doi.org/10.14507/epaa.24.1816>
- Thille, P. H., Rotteau, L., & Webster, F. (2021). More than words: Methods to elicit talk in interviews. *Family Practice*, 38(4), 545–547. <https://doi.org/10.1093/fampra/cmab043>
- Thompson, J. R., Walker, V. L., Carlson, S. R., Carpenter, M. E., & Edyburn, D. L. (2023). Does planning and arranging individualized supports for students with IDD influence educator confidence and competence in universal design for learning? *International Journal of Developmental Disabilities*. <https://doi.org/10.1080/20473869.2023.2286407>
- Toda, A. M., Palomino, P. T., Oliveira, W., Rodrigues, L., Klock, A. C. T., Gasparini, I., Cristea, A. I., & Isotani, S. (2019). How to gamify learning systems? An experience report using the design sprint method and a taxonomy for gamification elements in education. *Educational Technology and Society*, 22(3), 47–60.
- Töllner, F., Kuhl, P., & Besser, M. (2025). Formative Assessment in Inclusive Mathematics Education in Secondary Schools: A Systematic Review. *Education Sciences*, 15(5). <https://doi.org/10.3390/educsci15050577>
- Triviño-Amigo, N., Barrios-Fernandez, S., Mañanas-Iglesias, C., Carlos-Vivas, J., Mendoza-Muñoz, M., Adsuar, J. C., Acevedo-Duque, Á., & Rojo-Ramos, J. (2022). Spanish Teachers' Perceptions of Their Preparation for Inclusive Education: The Relationship between Age and Years of Teaching Experience. *International Journal of Environmental Research and Public Health*, 19(9). <https://doi.org/10.3390/ijerph19095750>
- Triviño-Amigo, N., Polo-Campos, I., Gomez-Paniagua, S., Barrios-Fernandez, S., Mendoza-Muñoz, M., & Rojo-Ramos, J. (2023). Differences in the Perception Regarding Inclusion Preparation among Teachers at Different Educational Stages. *International Journal of Environmental Research and Public Health*, 20(4). <https://doi.org/10.3390/ijerph20043420>
- Tsay, C. H.-H., Kofinas, A., & Luo, J. (2018). Enhancing student learning experience with technology-mediated gamification: An empirical study. *Computers and Education*, 121, 1–17. <https://doi.org/10.1016/j.compedu.2018.01.009>
- Vatsalan, D., Rakotoarivelo, T., Bhaskar, R., Tyler, P., & Ladjal, D. (2022). Privacy risk quantification in education data using Markov model. *British Journal of Educational Technology*, 53(4), 804–821. <https://doi.org/10.1111/bjet.13223>
- Velu, S., Wahid, I. S., & Tabianan, K. (2025). Stimulating innovative learning practices with tech: artefacts influence learners' actions. *Journal of Innovation and Entrepreneurship*, 14(1). <https://doi.org/10.1186/s13731-025-00523-7>
- Veytia Bucheli, M. G., Gómez-Galán, J., Cáceres Mesa, M. L., & López Catalán, L. (2024). Digital technologies as enablers of universal design for learning: higher education students' perceptions in the context of SDG4. *Discover Sustainability*, 5(1). <https://doi.org/10.1007/s43621-024-00699-0>
- Voshaar, J., Knipp, M., Loy, T., Zimmermann, J., & Johannsen, F. (2023). The impact of using a mobile app on learning success in accounting education. *Accounting Education*, 32(2), 222–247.
- Wan, B., Wang, Q., Su, K., Dong, C., Song, W., & Pang, M. (2021). Measuring the Impacts of Virtual Reality Games on Cognitive Ability Using EEG Signals and Game Performance Data. *IEEE Access*, 9, 18326–18344. <https://doi.org/10.1109/ACCESS.2021.3053621>
- Wan, S. W.-Y. (2017). Differentiated instruction: are Hong Kong in-service teachers ready? *Teachers*

and Teaching: Theory and Practice, 23(3), 284–311.  
<https://doi.org/10.1080/13540602.2016.1204289>

- Wardana, S., & Sagoro, E. M. (2019). Implementasi gamifikasi berbantu media kahoot untuk meningkatkan aktivitas belajar, motivasi belajar, dan hasil belajar jurnal penyesuaian siswa kelas X akuntansi 3 di SMK Koperasi Yogyakarta tahun ajaran 2018/2019. *Jurnal Pendidikan Akuntansi Indonesia*, 17(2), 46–57.
- Wylie, E. C., & Lyon, C. J. (2020). Developing a Formative Assessment Protocol to Support Professional Growth. *Educational Assessment*, 25(4), 314–330.  
<https://doi.org/10.1080/10627197.2020.1766956>
- Xie, Z.-B., Cheng, X.-Y., Li, X.-Y., & Zhang, Y.-F. (2025). Team-based learning pedagogy enhances the education quality: a systematic review and meta-analysis. *BMC Medical Education*, 25(1).  
<https://doi.org/10.1186/s12909-025-07175-x>
- Yang, K.-H., & Chen, H.-H. (2023). What increases learning retention: employing the prediction-observation-explanation learning strategy in digital game-based learning. *Interactive Learning Environments*, 31(6), 3898–3913. <https://doi.org/10.1080/10494820.2021.1944219>
- Yang, L. (2024). Exploration of Digital Transformation Path of Education Management in Colleges and Universities in the Internet Era. *Applied Mathematics and Nonlinear Sciences*, 9(1).  
<https://doi.org/10.2478/amns-2024-0802>
- Yaseen, H., Mohammad, A. S., Ashal, N., Abusaimeh, H., Ali, A., & Sharabati, A.-A. A. (2025). The Impact of Adaptive Learning Technologies, Personalized Feedback, and Interactive AI Tools on Student Engagement: The Moderating Role of Digital Literacy. *Sustainability (Switzerland)*, 17(3). <https://doi.org/10.3390/su17031133>
- Yazicioğlu, T., Sardohan Yildirim, A. E., & Altındağ Kumaş, Ö. (2025). Inclusive Education From Children’s Perspective: Examining Social, Emotional, and Academic Perceptions of Students With Learning Disabilities and Typically Developing Students. *Psychology in the Schools*.  
<https://doi.org/10.1002/pits.23506>
- Yekela, O., Thomson, K.-L., & van Niekerk, J. (2024). Creating a Topic Map for representing Network Security Competencies. *Procedia Computer Science*, 237, 913–922.  
<https://doi.org/https://doi.org/10.1016/j.procs.2024.05.179>
- Zhang, Y., Deng, Q., Zheng, X., Xu, X., & Wang, F. (2025). Online continuing education for midwives in China: current trends, barriers, and future directions. *BMC Medical Education*, 25(1).  
<https://doi.org/10.1186/s12909-025-07180-0>
- Zhou, P., Chen, F., Wang, W., Song, P., & Zhu, C. (2019). Does the development of information and communication technology and transportation infrastructure affect China’s educational inequality? *Sustainability (Switzerland)*, 11(9). <https://doi.org/10.3390/su11092535>
- Zhukova, O., Platash, L., & Tymchuk, L. (2022). Inclusive education as a tool for implementing the Sustainable Development Goals on the basis of humanization of society. *Problemy Ekorozwoju*, 17(1), 114–122.

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