Educational Administration: Theory and Practice
2024, 30(6), 2020-2031
ISSN: 2148-2403
https://kuey.net/

Research Article

Gamifying Learning for Enhanced Attention: Empowering Students with Learning Disabilities through Competence, Intrinsic Motivation, and Technology Acceptance

1. Abdallatif Alramamnh, abd.romman@bau.edu.jo, Al-Balqa Applied University, jordan
2. Obaid Al-Sabayleh, obaied.sabayleh@bau.edu.jo, Al-Balqa Applied University, jordan
3. Ra'fat Al-Shibly, Rafat.al-shibly@auct.edu.jo.,Arab University College Of Technology, Amman, Jordan,
4. Hanada Abzakh, habzakh@bau.edu.jo, Al-Balqa Applied University, jordan
5. Mohammad Sakarneh, msakarneh@bau.edu.jo, , Al-Balqa Applied University, jordan
6. Ali Alawamreh, aalawamreh@zu.edu.jo, Zarqa University, jordan

Citation: Abdallatif Kalaf Alramammnh , et al (2024), Gamifying Learning for Enhanced Attention: Empowering Students with learning Disabilities through Competence, Intrinsic Motivation, and Technology Acceptance , *Educational Administration: Theory and Practice*, *30*(6), 2020-2031, Doi: 10.53555/kuey.v30i6.4719

ARTICLE INFO

ABSTRACT

This research delves into an investigation of how students with learning disabilities interact with gamified learning technology, particularly focusing on their attention patterns. Furthermore, it examines the impact of factors such as perceived usefulness, perceived ease of use, intrinsic motivation, and competence on these attention patterns. This study emphasizes the value of competence and intrinsic motivation in improving students with learning disabilities' attention when utilizing this educational technology. The favorable effects of intrinsic motivation and competence on attention levels highlight the significance of individual interest and competency in gamification-assisted learning. These results highlight the demand for specialized gamification-learning technology solutions that take into account the varied needs of this student population and guarantee that perceived usability corresponds to real usability. It is crucial to appreciate the importance of personal desire and skill in sustaining focus during technology-based learning. Ultimately, this study offers insightful information for the creation of inclusive and successful educational resources for students with learning disabilities.

Keywords: *Gamification-learning Technology, students with learning disabilities, TAM, intrinsic motivation, and competence*

1. Introduction

In the constantly shifting terrain of educational theory and practice, the enduring goal of unlocking and maximizing the innate and limitless potentials of every student remains both an abiding and commendable pursuit (Abdurakhmonova, 2022). The importance of this goal becomes even more evident when we shift our attention towards a specific group of learners, namely, individuals with learning disabilities who face substantial challenges in sustaining focus and active participation. In the vast realm of education, this matter emerges as an urgent and compelling issue that calls for our immediate and unwavering commitment (Nurtanto, Fawaid, & Sofyan, 2020; Rawash, Alawamreh, & Obeidat, 2023). In response to this urgent requirement, a profoundly encouraging and exceptionally auspicious concept emerges: a thoughtfully crafted bridge, acting as a beacon of guidance. This bridge reaches out into the dynamic and captivating world of gaming, all the while traversing the well-trodden path of conventional teaching approaches (Viswasom & Jobby, 2017; Xie, Hwang, & Wong, 2021). This concept is known as gamification, and as we embark on a life changing journey into the heart of educational innovation, driven by a burning curiosity and the unwavering conviction that every student deserves the chance to succeed, we find ourselves at the center of opportunity and development (Miranda et al., 2021; Viswasom & Jobby, 2017; Xie et al., 2021). In the context of this research, we have conducted an in-depth exploration of the integration of gamification. This integration is carefully interwoven with the intertwined dimensions of competence and intrinsic motivation, and it is guided by the structured framework provided by the Technology Acceptance Model (TAM). The focus of this inquiry

lies in its capacity to not only exert an influence but also to undergo a substantial metamorphosis and reshaping of the attentional landscape for students contending with learning disabilities. The convergence of these elements extends beyond a purely theoretical framework; instead, it provides a tangible lifeline – a means of bridging the divide between educational hurdles and empowerment, and a pathway toward realizing the distinctive potential that resides within each student. This assertion gains particular relevance in the contemporary context, marked by a profusion of distractions in the digital sphere that vie for attention, and where the demands of the educational environment can become overwhelmingly intense. (Alfadda & Mahdi, 2021; Martinez, Menéndez-Menéndez, & Bustillo, 2022; Saleem, Noori, & Ozdamli, 2022).

2. Problem statements

There is a commitment in Jordan, as in many other nations, to creating inclusive and equitable learning environments that meet the different needs of all students, including those with learning difficulties (Kurach et al., 2020). However, when we take into account student with learning disabilities, a population that frequently struggles with major difficulties in keeping attention and participation in the classroom, this admirable ambition takes on additional significance. The primary problem is the need to adequately handle these difficulties and offer these students with specialized solutions that enable them to not only participate but also thrive in their academic endeavors (James, Ma, Arrojo, & Davison, 2020; Kurach et al., 2020).

A spectrum of cognitive and neurodevelopmental disorders, including dyslexia, attention deficit hyperactivity disorder (ADHD), and particular learning difficulties in reading, writing, or mathematics, are all included in Jordan's definition of learning disabilities. According to statistics from the Jordanian Ministry of Education, 5 to 10% of students may have learning difficulties, which is a large fraction of the student population. These highlight how critical it is to identify and cater to the specific educational needs of this group. The inability to pay attention and actively participate in the learning process for extended periods of time is one of the most significant difficulties faced by Jordanian students with learning problems (Khasawneh, 2021b; Sallam et al., 2020). These students frequently struggle to concentrate on assignments, process information, and actively participate in class activities. Distractions, both inside and outside the classroom, might make learning more difficult for them (Coman, Țîru, Meseșan-Schmitz, Stanciu, & Bularca, 2020; Sormunen, Juuti, & Lavonen, 2020). Despite being successful for many students, traditional educational approaches do not have the flexibility needed to meet the various requirements of students with learning difficulties. These s may unintentionally be excluded from or disengaged from the traditional "one-size-fits-all" educational model, which would impede their academic development and general well-being (Alam, 2022; Mahoney et al., 2021).

Gamification stands out as a compelling possibility in the face of these difficulties. Gamification is the incorporation of game features into environments that are not games, and it provides a means of addressing challenges with engagement and attention in kids with learning disabilities. Gamification has the ability to improve learning by making it more interactive, fun, and individualized by utilizing the concepts of game design. Our knowledge of how gamification, when combined with the elements of competence and intrinsic motivation, can affect children with learning disabilities within the particular educational setting of Jordan is critically lacking, though.

This study seeks to explore the complex relationships between competence, intrinsic motivation, and the Technology Acceptance Model (TAM) in the effective implementation of gamification strategies designed for Jordanian students with learning disabilities. Designing evidence-based treatments that truly empower and engage students in the Jordanian educational landscape requires an understanding of how these factors interact and have an impact on the acceptance of and effectiveness of gamification in boosting attention.

3. Proposed model Empowering Students with Learning Disabilities through Competence, Intrinsic Motivation, and Technology Acceptance

In order to meet the specific educational demands of Jordanian students with learning difficulties, we envision and suggest a comprehensive framework that combines and synergizes three essential elements: competence development, intrinsic motivation, and technological acceptance. This multimodal model's main objective is to provide highly customized, efficient learning experiences that are painstakingly crafted to meet the unique learning demands of each individual learner. At its core, the framework strategically emphasizes competence development by concentrating on the growth of crucial skills and information (Bahodirovich & Romilovich, 2021). This is made possible by the clever integration of adaptive technologies, which guarantees that the learning process is both individualized and adaptive, taking into account the pace and advancement of each learner. We use intrinsic motivational principles to further energize the learning process and foster a profound enthusiasm for learning (Alamri, Lowell, Watson, & Watson, 2020). Our framework integrates game components that go beyond the conventional classroom setting by drawing inspiration from the entertaining gaming industry. These components include unambiguous goals, quick feedback, a feeling of accomplishment, and a narrative that flows continuously and moves pupils ahead. By doing this, we hope to build emotionally engaging and immersive learning environments that ignite students' innate urge to explore, learn, and succeed. The model additionally emphasizes an important priority on technology adoption, emphasizing the value of

user-friendly and accessible technological tools for kids with a range of learning difficulties. We offer thorough training and assistance to both students and instructors, establishing a culture of digital fluency, to enable seamless integration (Poobrasert, Luxsameevanich, & Meekanon, 2023). Every stakeholder has the ability to utilize technology's full potential in the learning process thanks to this collaborative approach (Alamri et al., 2020; Poobrasert et al., 2023).

- **The Technology Acceptance Model (TAM)**

It is a widely accepted theoretical paradigm in the administration of information systems. TAM's primary goal is to explain and forecast how people will adopt and use technology. According to the paradigm, perceived usability and ease of use are the two main determinants of users' acceptance of technology. The term "perceived ease of use" describes how the user feels about how simple it is to utilize the technology (Tahar, Riyadh, Sofyani, & Purnomo, 2020). People are more inclined to embrace and use a certain technology if they think it is simple to use and learn. On the other side, adoption rates are likely to fall if the technology is thought to be complicated and challenging. The user's view of the technology's value in assisting them in their work or in reaching particular objectives is related to perceived utility, the second crucial aspect. People are more likely to adopt a technology if they believe it will benefit their efficiency, productivity, or overall experience (Alduaij, 2019; Nuseir, Aljumah, & El Refae, 2022; Tahar et al., 2020). TAM is a frequently used model for analyzing user behavior when adopting new technologies because of its elegance in simplicity. It affects how user-friendly interfaces are designed, how technology training programs are improved, and how overall user experiences are improved. Perceived ease of use and perceived usefulness are the two main factors that TAM focuses on, and it offers significant information for businesses and developers who are attempting to design and launch technological solutions that are in line with user demands and expectations. In the end, TAM contributes to the evaluation and improvement of technology acceptance, promoting quicker technology adoption cycles and more effective implementations across a range of areas (Alduaij, 2019, 2020; Nuseir et al., 2022; Sawitri & Giantari, 2020; Tahar et al., 2020).

H1: There is a significant positive relationship between the Perceived ease of use of using gamified learning and enhanced attention in students with learning disabilities.

H2: H1: There is a significant positive relationship between the Perceived usefulness of using gamified learning and enhanced attention in students with learning disabilities.

- **Intrinsic motivation**

It is a fundamental psychological principle that motivates people to engage in activities or jobs for the internal fulfillment, pleasure, or self-fulfillment they bring, as opposed to for rewards or pressure from others(Aubret, Matignon, & Hassas, 2019). It is the innate drive to pursue something only because it is intriguing, difficult, or consistent with one's ideals and objectives. Intrinsic motivation comes from inside and inspires a sincere desire for learning, creativity, or performance as opposed to extrinsic motivation, which depends on external rewards like money or praise (Kotera, Taylor, Fido, Williams, & Tsuda-McCaie, 2023). A sense of autonomy in one's actions and a persistent level of engagement are frequently outcomes of intrinsic drive. People who are intrinsically motivated are more likely to stick with something, get beyond challenges, and own their objectives. The development of intrinsic motivation is an essential component of education since it motivates students to become self-driven learners who are eager to discover novel topics and mastery them. Recognizing and supporting intrinsic motivation at work can enhance innovation and job happiness. Understanding and using this force effectively can have significant effects on one's growth, education, and ability to lead an organization (Kotera et al., 2023; Shin, Hur, Moon, & Lee, 2019; Zhang & Liu, 2022).

H3: *There is a significant positive relationship between the Intrinsic Motivation of using gamified learning and enhanced attention in students with learning disabilities.*

- **Competence**

It is a broad notion that includes the knowledge, abilities, skills, and aptitude needed to successfully carry out a given work or achieve success in a certain field. It denotes a person's aptitude and expertise in a certain field and is essential to obtaining success and mastery in a variety of spheres of life. Competence is dynamic and changes as a result of learning, doing, and experiencing new things (Basilotta-Gómez-Pablos, Matarranz, Casado-Aranda, & Otto, 2022; Pamuji & Limei, 2023). Competence is highly regarded in both academic and professional settings. It acts as the basis for problem-solving, judgment, and creativity (Khang, Jadhav, & Birajdar, 2023). Competent people are more able to overcome obstacles, adjust to changing conditions, and make significant contributions to their fields. Additionally, confidence and competence frequently go hand in hand since people who are confident in their skills are more inclined to tackle jobs and responsibilities with assurance. Competence includes both interpersonal and emotional intelligence in addition to technical and intellectual skills. The capacity to effectively interact, communicate, and empathize with others is equally important in today's linked society (Hohman, Conlen, Heer, & Chau, 2020). As a result, competence is a dynamic and all-encompassing idea that is essential for success in a variety of spheres of life, including personal and professional development. In essence, our entire framework aims to provide students with learning disabilities in Jordan with more than just the educational needs; it also aims to provide them with the crucial

knowledge, abilities, and unshakable motivation required to succeed on their own educational journeys (Al-Hroub & Whitebread, 2019; Atanga, Jones, Krueger, & Lu, 2020; García-Redondo, García, Areces, Núñez, & Rodríguez, 2019; Grondin, Lomanowska, & Jackson, 2019; Khasawneh, 2021a; Rashidov, 2020). This concept is a tribute to the transformative power of education, with the potential to bring about good change and unleash the limitless potential inside each student, amid the dynamic and culturally rich context of Jordan.
H4: There is a significant positive relationship between the competence of using gamified learning and enhanced attention in students with learning disabilities.

4. Methodology

In this study, we employed survey questionnaires as a robust means of gathering data, involving educators who are responsible for students with learning disabilities in both the Balqa and Jarash regions. Before distributing the questionnaires to the participants, the cross-sectional survey design's reliability and validity were examined (AlMughamis, AlAsfour, & Mehmood, 2020; Alrubaiee, Al-Qalah, & Al-Aawar, 2020; Saffar & Obeidat, 2020). Researchers selected 200 teachers from population. The responses were used for analysis after accounting for undeliverable and incomplete questionnaires. The sample size was deemed sufficient, and the response rate was on line with that of earlier research in the area. The questionnaires' purpose was to investigate the intricate connections between intrinsic motivation, competence, and the Technology Acceptance Model (TAM) in the efficient application of gamification tactics created for Jordanian students with learning disabilities. Competence, intrinsic motivation, and the technology acceptance model are all part of the conceptual framework for the study, which focuses on examining how competence and intrinsic motivation affect the success of gamification in the Jordanian educational context. Examine how students' attitudes and perceptions of gamified learning experiences in Jordan are shaped by the Technology Acceptance Model (TAM)(Al-Adwan et al., 2023; Mustafa & Garcia, 2021).

5. Data analysis and finding

The descriptive statistics for the sample were analyzed using SPSS version 22, and the latent variable within the causal structure was investigated using Smart PLS version 3. In the next subsections, we present the statistical analysis' findings. As a result, we chose a total of 100 individuals at random from each governorates (U Sekaran & Bougie, 2010). At the end, the researchers had collected 181 questionnaires in total, all of which were viable samples.

a. Evaluation of the Measurement Model

In research and data analysis, particularly in disciplines like psychology, economics, and the social sciences, the evaluation of the measuring model is a crucial stage. The links between latent (unobservable) factors and the related observed indicators or variables are explored in this model. Its main goal is to make sure that the underlying constructs or concepts of interest are accurately captured and represented by the measurement model. To determine how closely the model matches the actual data, researchers use a variety of statistical methods, such as confirmatory factor analysis (CFA) or structural equation modeling (SEM). Strong model fit supports the reliability of inferences made from empirical research by indicating that the observable variables faithfully reflect the hidden components. Furthermore, by identifying potential problems or sources of bias within the measurement model, this review method helps researchers improve the overall accuracy and precision of their research findings.(Uma Sekaran & Bougie, 2016). The measurement model was tested using a group of 20 reflected indicators, as shown in Figure 2. It was discovered during this study that one of the items, PU3, displayed a factor loading that was below the cutoff of 0.50. As suggested by Hair et al. (2011) thus, indicators should be considered for elimination if doing so will raise composite reliability (CR) above the recommended threshold value when the variable factor loading values are between 0.40 and 0.70. Therefore, in this work, these specific indications were thoroughly eliminated using the PLS algorithm test.

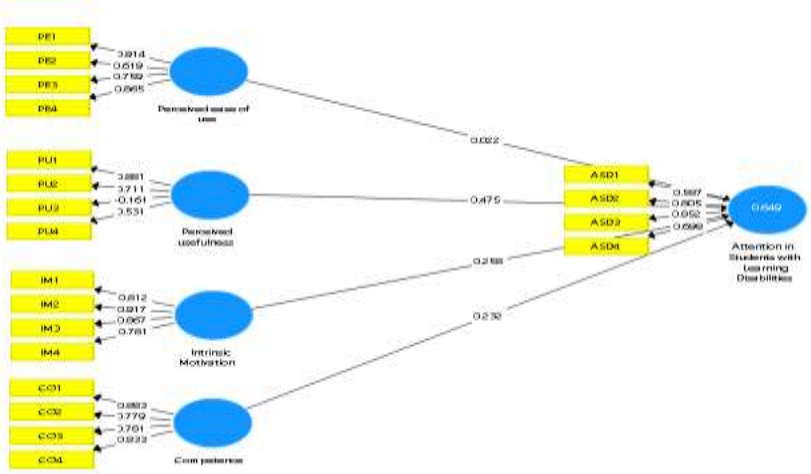

Figure 1 Measurement Model

Using the Average Variance Extracted (AVE), Table 1 illustrates the convergent validity of each component evaluated. The degree to which a measure has a positive connection with additional measures of the same construct is known as convergent validity (Hair Jr, Hult, Ringle, & Sarstedt, 2016). According to recommendations from earlier studies, the appropriate minimum value of AVE in this study was 0.4. (Hair Jr et al., 2016; Ramayah, Ling, Taghizadeh, & Rahman, 2016).

The findings show that although perceived usefulness had the lowest acceptable value (0.398), and intrinsic motivation had the greatest AVE (0.716). Additionally
, using the CR values shown in Table 1, the internal consistency of the respective structures was evaluated. Although it is advised that the benchmark value be at least 0.70, it is important to note that a higher CR value is preferable. The CR values in this study for each individual construct ranged from 0.615 to 0.909, all of which are higher than the benchmark value.

These findings confirm that, based on the designated benchmark values, the variables have satisfied the requirements for convergent validity.

Table (1) Results of Measurement Model

Variable	Items	Factor Loading	Composite Reliability (CR)	Average Variance Extracted (AVE)>50%
Perceived Ease of Use	PE1	0.914	0.872	0.636
	PE2	0.619		
	PE3	0.759		
	PE4	0.865		
Perceived Usefulness	PU1	0. 881	0.615	0.398
	PU2	0.711		
	PU3	~~0.161~~		
	PU4	0.531		
Intrinsic motivation	IM1	0.812	0.909	0.716
	IM2	0.917		
	IM3	0.867		
	IM4	0. 781		
competence	CO1	0.883	0.891	0.672
	CO2	0.779		
	CO3	0.781		
	CO4	0.837		
Attention in Students with Learning Disabilities	ASD1	0.587	0.828	0.552
	ASD2	0.805		
	ASD3	0.852		
	ASD4	0.698		

The current study applied the Fornell and Larcker (1981) and Henseler, Ringle, and Sarstedt (2015) The comparison between the average square root of the extracted variance of a specific construct and the correlation coefficients among all variables is a crucial step in determining the discriminant validity of the tested constructs. Strong discriminant validity is demonstrated when the average square root of extracted variance for a construct is greater than the correlations between that construct and all other variables (Hair Jr et al., 2016). According to the Fornell and Larker criterion, as shown in Table 2, the results show that each construct has appropriate discriminant validity because its squared correlation is less than the average variance recovered. Additionally, the production of the disattenuated construct score follows the Heterotrait-Monotrait Ratio (HTMT), which provides an assessment of the correlation between constructs. use 0.9 as the cutoff value.

As shown in Table 3, this study came to the conclusion that all the constructs fit the criteria and that there is no evidence of a lack of discriminant validity.

Table 2. Assessment of Discriminant Validity (Fornell & Larcker, 1981)

	Attention in Students with Learning Disabilities	Competence	Intrinsic Motivation	Perceived ease of use	Perceived usefulness
Attention in Students with Learning Disabilities	**0.743**				
Competence	0.581	**0.820**			
Intrinsic Motivation	0.588	0.340	**0.846**		
Perceived ease of use	0.524	0.427	0.556	**0.797**	
Perceived usefulness	0.740	0.531	0.503	0.548	**0.631**

	Cronbach's Alpha	Rho_A	Composite Reliability	Average Variance Extracted (AVE)
Attention in Students with Learning Disabilities	0.720	0.742	0.828	0.552
Competence	0.838	0.867	0.891	0.672
Intrinsic Motivation	0.868	0.919	0.909	0.716
Perceived ease of use	0.810	0.894	0.872	0.636
Perceived usefulness	0.428	0.607	0.615	0.398

Table 3: Assessment of Discriminant Validity (HTMT) (Henseler et al., 2015)

The results for all constructs were taken into consideration as legitimate measures of those particular constructs based on their parameter estimates and statistical significance. Overall findings indicate that this study's measurement model's empirical evidence for its reliability, convergent validity, and discriminant validity was good.

b. Evaluation of the Structural Model

A crucial stage in empirical research, especially in fields like economics, sociology, and psychology, is the evaluation of the structural model. This model explores the complex interactions between latent variables or constructs, revealing the underlying causes and causal chains in the phenomenon under study. In order to carefully examine how well the structural model fits with their theoretical hypotheses and the observable data, researchers frequently use cutting-edge techniques like structural equation modelling (SEM). Along with a thorough investigation of the strength and importance of inter-variable connections, this evaluation also looks at the overall model fit. Such examination assists in determining the suggested theoretical framework's accuracy in representing processes in the real world (Hair Jr et al., 2021; Jaros, Jermier, Koehler, & Sincich, 1993; Steiger, 1990).

A well-fitting structural model not only supports the theoretical underpinnings of the study but also illuminates the complex interplay of factors, providing important insights into the phenomenon being examined. The significant level of the path coefficients (beta values) and measurements like the determination coefficient are the main evaluation criteria for the structural model's goodness. An increased Adjusted R-squared value indicates a tighter fit for the structural equation model because endogenous variables are better able to explain the variation of the exogenous variable (AbduRazak, Mawdieh, Karam, Aljaafreh, & Al-Azzaw, 2019; Al-Mawdieh, 2020; Hair Jr et al., 2021; Qawaqneh, Ahmad, & Alawamreh, 2023; Rawash et al., 2023).

The results obtained from testing the research hypotheses in figure 2 and table 4 show that three supported and one is not supported. Thus, the results indicate that the Perceived Ease of Use is not significantly and positively influence attention in Students with Learning Disabilities ($ß = 0.009$, $t = 0.148$, $p \geq 0.05$). Therefore, H1 is not supported. The assumption that students with learning disabilities pay more attention may not always be true due to individual differences in how students perceive ease of use, potential discrepancies between perceived and actual ease of use, the effect of task complexity on attention, and the critical role of Motivation and interest in directing attention. Additionally, because students with learning disabilities are a heterogeneous community, what is considered to be simple to use can differ greatly amongst people.

Additionally, attention may not necessarily increase if a technology is viewed as simple to use yet does not match the actual usability. The results also confirm the second hypothesis, which states that perceived usefulness has a significant and favorable impact on attention in students with learning disabilities (ß = 0.433, t = 6.718, p 0.05). Furthermore, our consequences reveal that Intrinsic Motivation significantly and positively influences attention in Students with Learning Disabilities (ß = 0.291, t = 5.447, p < 0.05), thus confirming the third hypothesis (H3). Additionally, the data shows that Competence significantly and positively influences attention in Students with Learning Disabilities (ß = 0.229, t = 3.936, p < 0.05), lending support to the fourth hypothesis (H4). As the researcher earlier highlighted, these supported hypotheses are consistent with the results of preceding studies.

Table 4. Hypothesis Testing

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Competence -> Attention in Students with Learning Disabilities	0.229	0.225	0.058	3.936	0.000
Intrinsic Motivation -> Attention in Students with Learning Disabilities	0.291	0.291	0.053	5.447	0.000
Perceived ease of use -> Attention in Students with Learning Disabilities	0.009	0.013	0.063	0.148	0.883
Perceived usefulness -> Attention in Students with Learning Disabilities	0.433	0.434	0.064	6.718	0.000

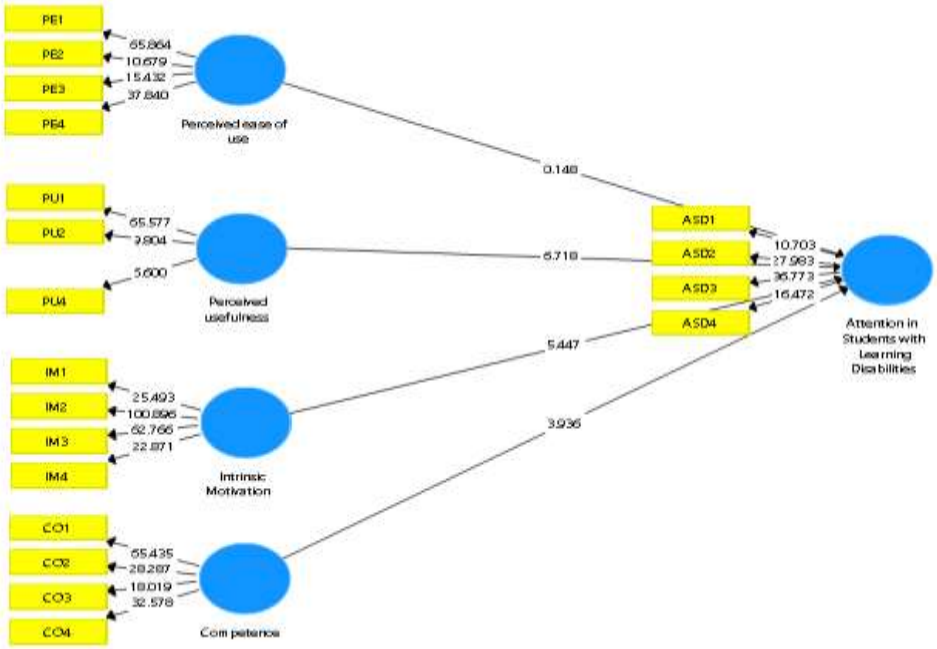

Fig. 2 Structural Model

6. Discussion

The findings of this study shed light on the intricate interaction of variables affecting students with learning disabilities' levels of attention when utilizing educational technology (Atanga et al., 2020). The discoveries' consequences and their importance for both theoretical understanding and real-world applications are explored in this debate. The study highlights a discrepancy between usability and perceived ease of use. This suggests that students with learning disabilities may experience difficulties utilizing technology interfaces that they consider to be user-friendly. To close this gap, usability testing, learner involvement in the design process, and adherence to accessibility standards are essential. To keep students' attention during technology-based learning, it is crucial to make sure that the technology is actually user-friendly (Atanga et al., 2020; Seale, 2023). Consequently, in students with learning disabilities, perceived usefulness is found to be a key component that favorably affects attention. This conclusion emphasizes how crucial it is for students to view instructional technology as beneficial and appropriate for their learning requirements (Anderson & Rivera Vargas, 2020). Teachers and designers should make sure that technology tools effectively express their advantages and useful uses to increase attention (Beardsley, Albó, Aragón, & Hernández-Leo, 2021). Therefore,

the strong and advantageous impact of intrinsic motivation on attention is one of the study's key findings (Hussain, Abbas, Gulzar, Jibril, & Hussain, 2020). This finding is consistent with the self-determination theory, which holds that when people are intrinsically driven, they engage in learning tasks more thoroughly and persistently (Hussain et al., 2020; Shafi, Lei, Song, & Sarker, 2020). This suggests that developing students' personal interests and curiosities might be a significant technique in improving their attention in the setting of instructional technology. For educators and educational technologists who want to provide interesting and inspiring learning experiences for children with learning difficulties, this study is of utmost significance (Banda & Nzabahimana, 2023; ERDOĞAN & ŞEREFLİ, 2021).

The study also shows that competency, or having a sense of competence and confidence, has a favorable effect on attention. This emphasizes how crucial it is to create instructional technology that not only caters to various learning demands but also gives students the tools they need to develop their abilities and self-confidence. Platforms for instructional technology should have elements that offer constructive criticism and chances for skill improvement. The necessity for customized educational technology solutions is thus maybe the study's most useful implication. Given the diversity of the student population with learning difficulties, it is crucial to take into account each person's needs and preferences. In order to cater to each learner's individual needs, personalization may entail changing the content, degree of difficulty, or interactive features (Erdoğdu & Çakıroğlu, 2021; Saidova, 2023).

This study offers important new understandings into the variables influencing the attention spans of students with learning disabilities in classrooms using technology. It emphasizes the significance of drive, skill, perceived usefulness, and the alignment of perceived ease of use with actual usability. These findings emphasize the need for tailored and interesting learning experiences that enable students with learning difficulties to succeed in the digital era and have major implications for educators, educational technologists, and policymakers. These conclusions can be further developed through additional study, which will aid in the creation of inclusive and efficient teaching tools and methods (Abualoush, Obeidat, Tarhini, Masa'deh, & Al-Badi, 2018; Erdoğdu & Çakıroğlu, 2021; Obeidat & Otibi, 2015; Rahhal et al., 2022).

7. Theoretical Contribution and Practical Contribution

The identification and verification of variables influencing attention in this particular group are included in the study's theoretical contributions. It emphasizes the important roles that intrinsic motivation and perceptions of competence play in particular (García-Madariaga, López, Burgos, & Virto, 2019; Robson, Leonidou, & Katsikeas, 2002). By highlighting the significance of individual curiosity and self-assurance in retaining attention during technology-assisted learning, this fresh discovery strengthens our theoretical framework (Alawamreh & Elias, 2015; Hui, Hu, Clark, Tam, & Milton, 2008). The study also highlights the complex interactions between perceived usefulness, perceived ease of use, enhancing our knowledge of how these elements influence attention in students with learning disabilities. Thus, the research provides educators, policymakers, and designers of technology for education with useful information that they may put to use. The focus on intrinsic motivation leads us to believe that including components that foster individual interest in gamification learning can increase attention spans in students with learning disabilities. The importance of competence also highlights the necessity for educational resources that provide students with a sense of capability and confidence. The study also highlights the significance of customized approaches in developing educational technology solutions, taking into account the diversity of the student group. In order to ensure that the technology satisfies the unique requirements of students with learning difficulties, it encourages developers to match perceived ease of use with real usability (Esteve-Mon, Llopis-Nebot, & Adell-Segura, 2020; Han & Sa, 2021; Sun & Gao, 2020). In summary, this research provides a valuable framework for the development of inclusive and highly effective teaching resources, contributing to the establishment of a more equitable educational landscape for students coping with learning disabilities.

8. References

1. Abdurakhmonova, Z Yu. (2022). THE ROLE OF MODERN PEDAGOGICAL TECHNOLOGIES IN IMPROVING THE QUALITY OF THE EDUCATIONAL PROCESS. *Экономика и социум*(3-2 (94)), 12-16.
2. AbduRazak, Luma Fakhir, Mawdieh, RSA, Karam, Asaad Ali, Aljaafreh, Abdulsalam Yousef, & Al-Azzaw, Mohammed Elias. (2019). Determining the challenges faced by Syrian refugees students at Jordanian camps according to their perspective: A case of universities role to supporting. *Modern Applied Science, 13*(8), 176-182.
3. Abualoush, Shadi Habis, Obeidat, Abdallah Mishael, Tarhini, Ali, Masa'deh, Ra'ed, & Al-Badi, Ali. (2018). The role of employees' empowerment as an intermediary variable between knowledge management and information systems on employees' performance. *VINE Journal of Information and Knowledge Management Systems, 48*(2), 217-237.

4. Al-Adwan, Ahmad Samed, Li, Na, Al-Adwan, Amer, Abbasi, Ghazanfar Ali, Albelbisi, Nour Awni, & Habibi, Akhmad. (2023). Extending the technology acceptance model (TAM) to Predict University Students' intentions to use metaverse-based learning platforms. *Education and Information Technologies*, 1-33.
5. Al-Hroub, Anies, & Whitebread, David. (2019). Dynamic assessment for identification of twice-exceptional learners exhibiting mathematical giftedness and specific learning disabilities. *Roeper Review, 41*(2), 129-142.
6. Al-Mawdieh, Reda. (2020). The Reality of Strategic Planning in the Faculties of Educational Sciences in Jordanian Private Universities, and Its Relation to Academic Excellence. *International Journal of Higher Education, 9*(1), 270-279.
7. Alam, Ashraf. (2022). *A digital game based learning approach for effective curriculum transaction for teaching-learning of artificial intelligence and machine learning*. Paper presented at the 2022 International Conference on Sustainable Computing and Data Communication Systems (ICSCDS).
8. Alamri, Hamdan, Lowell, Victoria, Watson, William, & Watson, Sunnie Lee. (2020). Using personalized learning as an instructional approach to motivate learners in online higher education: Learner self-determination and intrinsic motivation. *Journal of Research on Technology in Education, 52*(3), 322-352.
9. Alawamreh, Ali Ratib, & Elias, Nur Fazidah. (2015). EXAMINING THE EFFECTIVENESS OF USING WEB-BASED LEARNING FOR GIFTED STUDENTS: JORDAN AS CASE STUDY. *Journal of Theoretical & Applied Information Technology, 76*(2).
10. Alduaij, Manal. (2019). Employing the technology acceptance model to explore the trends of social media adoption and its effect on perceived usefulness and perceived ease of use. *Journal of Information Technology Management, 11*(2), 129-143.
11. Alduaij, Manal. (2020). Employing the Technology Acceptance Model to Explore the Trends of Social Media Adoption and its Effect on Perceived Usefulness and Perceived Ease of Use. *College Student Journal, 54*(4), 460-473.
12. Alfadda, Hind Abdulaziz, & Mahdi, Hassan Saleh. (2021). Measuring students' use of zoom application in language course based on the technology acceptance model (TAM). *Journal of Psycholinguistic Research, 50*(4), 883-900.
13. AlMughamis, Nouf, AlAsfour, Shaimaa, & Mehmood, Shariq. (2020). Poor eating habits and predictors of weight gain during the COVID-19 quarantine measures in Kuwait: A cross sectional study. *F1000Research, 9*, 914.
14. Alrubaiee, Gamil Ghaleb, Al-Qalah, Talal Ali Hussein, & Al-Aawar, Mohammed Sadeg A. (2020). Knowledge, attitudes, anxiety, and preventive behaviours towards COVID-19 among health care providers in Yemen: an online cross-sectional survey. *BMC Public Health, 20*, 1-11.
15. Anderson, Terry, & Rivera Vargas, Pablo. (2020). A critical look at educational technology from a distance education perspective. *Digital Education Review, 2020, num. 37, p. 208-229*.
16. Atanga, Comfort, Jones, Beth A, Krueger, Lacy E, & Lu, Shulan. (2020). Teachers of students with learning disabilities: Assistive technology knowledge, perceptions, interests, and barriers. *Journal of Special Education Technology, 35*(4), 236-248.
17. Aubret, Arthur, Matignon, Laetitia, & Hassas, Salima. (2019). A survey on intrinsic motivation in reinforcement learning. *arXiv preprint arXiv:1908.06976*.
18. Bahodirovich, Orishev Jamshid, & Romilovich, Burkhonov Rasul. (2021). Project for training professional skills for future teachers of technological education. *Mental Enlightenment Scientific-Methodological Journal*, 139-150.
19. Banda, Herbert James, & Nzabahimana, Joseph. (2023). The impact of physics education technology (PhET) interactive simulation-based learning on motivation and academic achievement among malawian physics students. *Journal of Science Education and Technology, 32*(1), 127-141.
20. Basilotta-Gómez-Pablos, Verónica, Matarranz, María, Casado-Aranda, Luis-Alberto, & Otto, Ana. (2022). Teachers' digital competencies in higher education: a systematic literature review. *International Journal of Educational Technology in Higher Education, 19*(1), 1-16.
21. Beardsley, Marc, Albó, Laia, Aragón, Pablo, & Hernández-Leo, Davinia. (2021). Emergency education effects on teacher abilities and motivation to use digital technologies. *British Journal of Educational Technology, 52*(4), 1455-1477.
22. Coman, Claudiu, Ţîru, Laurenţiu Gabriel, Meseşan-Schmitz, Luiza, Stanciu, Carmen, & Bularca, Maria Cristina. (2020). Online teaching and learning in higher education during the coronavirus pandemic: Students' perspective. *Sustainability, 12*(24), 10367.
23. ERDOĞAN, Erdi, & ŞEREFLİ, Buket. (2021). Use of technology in social studies teaching: the journey of five teachers. *Eğitimde Nitel Araştırmalar Dergisi*(27), 232-256.
24. Erdoğdu, Fatih, & Çakıroğlu, Ünal. (2021). The educational power of humor on student engagement in online learning environments. *Research and Practice in Technology Enhanced Learning, 16*(1), 1-25.
25. Esteve-Mon, Francesc M, Llopis-Nebot, María Ángeles, & Adell-Segura, Jordi. (2020). Digital teaching competence of university teachers: A systematic review of the literature. *IEEE Revista Iberoamericana de Tecnologías del Aprendizaje, 15*(4), 399-406.

26. Fornell, Claes, & Larcker, David F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of marketing research*, 382-388.
27. García-Madariaga, Jesús, López, Maria-Francisca Blasco, Burgos, Ingrit Moya, & Virto, Nuria Recuero. (2019). Do isolated packaging variables influence consumers' attention and preferences? *Physiology & behavior, 200*, 96-103.
28. García-Redondo, Patricia, García, Trinidad, Areces, Débora, Núñez, José Carlos, & Rodríguez, Celestino. (2019). Serious games and their effect improving attention in students with learning disabilities. *International journal of environmental research and public health, 16*(14), 2480.
29. Grondin, Frédéric, Lomanowska, Anna M, & Jackson, Philip L. (2019). Empathy in computer-mediated interactions: A conceptual framework for research and clinical practice. *Clinical Psychology: Science and Practice, 26*(4), e12298.
30. Hair, Joe F, Ringle, Christian M, & Sarstedt, Marko. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing theory and Practice, 19*(2), 139-152.
31. Hair Jr, Joseph F, Hult, G Tomas M, Ringle, Christian M, Sarstedt, Marko, Danks, Nicholas P, Ray, Soumya, . . . Sarstedt, Marko. (2021). An introduction to structural equation modeling. *Partial least squares structural equation modeling (PLS-SEM) using R: a workbook*, 1-29.
32. Hair Jr, Joseph F, Hult, G Tomas M, Ringle, Christian, & Sarstedt, Marko. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)*: Sage Publications.
33. Han, Jee-Hoon, & Sa, Hye Ji. (2021). Acceptance of and satisfaction with online educational classes through the technology acceptance model (TAM): The COVID-19 situation in Korea. *Asia Pacific Education Review*, 1-13.
34. Henseler, Jörg, Ringle, Christian M, & Sarstedt, Marko. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the academy of marketing science, 43*(1), 115-135.
35. Hohman, Fred, Conlen, Matthew, Heer, Jeffrey, & Chau, Duen Horng Polo. (2020). Communicating with interactive articles. *Distill, 5*(9), e28.
36. Hui, Wendy, Hu, PJ-H, Clark, Theodore HK, Tam, Kar Yan, & Milton, John. (2008). Technology-assisted learning: a longitudinal field study of knowledge category, learning effectiveness and satisfaction in language learning. *Journal of Computer Assisted Learning, 24*(3), 245-259.
37. Hussain, Kanwal, Abbas, Zuhair, Gulzar, Saba, Jibril, Abdul Bashiru, & Hussain, Altaf. (2020). Examining the impact of abusive supervision on employees' psychological wellbeing and turnover intention: The mediating role of intrinsic motivation. *Cogent Business & Management, 7*(1), 1818998.
38. James, Stephen, Ma, Zicong, Arrojo, David Rovick, & Davison, Andrew J. (2020). Rlbench: The robot learning benchmark & learning environment. *IEEE Robotics and Automation Letters, 5*(2), 3019-3026.
39. Jaros, Stephen J, Jermier, John M, Koehler, Jerry W, & Sincich, Terry. (1993). Effects of continuance, affective, and moral commitment on the withdrawal process: An evaluation of eight structural equation models. *Academy of management Journal, 36*(5), 951-995.
40. Khang, Alex, Jadhav, Babasaheb, & Birajdar, Sphurti. (2023). Industry Revolution 4.0: Workforce Competency Models and Designs *Designing Workforce Management Systems for Industry 4.0* (pp. 11-34): CRC Press.
41. Khasawneh, Mohamad Ahmad Saleem. (2021a). The effectiveness of a training program based on Erikson's theory in developing independence skills among students with learning disabilities in Jordan. *Science and Education, 2*(8), 457-471.
42. Khasawneh, Mohamad Ahmad Saleem. (2021b). Language skills and their relationship to learning difficulties in English language from the students' point of view. *Science and Education, 2*(9), 261-272.
43. Kotera, Yasuhiro, Taylor, Elaina, Fido, Dean, Williams, Dan, & Tsuda-McCaie, Freya. (2023). Motivation of UK graduate students in education: Self-compassion moderates pathway from extrinsic motivation to intrinsic motivation. *Current Psychology, 42*(12), 10163-10176.
44. Kurach, Karol, Raichuk, Anton, Stańczyk, Piotr, Zając, Michał, Bachem, Olivier, Espeholt, Lasse, . . . Bousquet, Olivier. (2020). *Google research football: A novel reinforcement learning environment*. Paper presented at the Proceedings of the AAAI conference on artificial intelligence.
45. Mahoney, Joseph L, Weissberg, Roger P, Greenberg, Mark T, Dusenbury, Linda, Jagers, Robert J, Niemi, Karen, . . . VanAusdal, Karen. (2021). Systemic social and emotional learning: Promoting educational success for all preschool to high school students. *American Psychologist, 76*(7), 1128.
46. Martinez, Kim, Menéndez-Menéndez, María Isabel, & Bustillo, Andres. (2022). A New Measure for Serious Games Evaluation: Gaming Educational Balanced (GEB) Model. *Applied Sciences, 12*(22), 11757.
47. Miranda, Jhonattan, Navarrete, Christelle, Noguez, Julieta, Molina-Espinosa, José-Martin, Ramírez-Montoya, María-Soledad, Navarro-Tuch, Sergio A, . . . Molina, Arturo. (2021). The core components of education 4.0 in higher education: Three case studies in engineering education. *Computers & Electrical Engineering, 93*, 107278.
48. Mustafa, Abdulsalam Salihu, & Garcia, Manuel B. (2021). *Theories integrated with technology acceptance model (TAM) in online learning acceptance and continuance intention: A systematic review*. Paper presented at the 2021 1st Conference on online teaching for mobile education (OT4ME).

49. Nurtanto, Muhammad, Fawaid, Moh, & Sofyan, Herminarto. (2020). *Problem based learning (PBL) in Industry 4.0: Improving learning quality through character-based literacy learning and life career skill (LL-LCS)*. Paper presented at the Journal of Physics: Conference Series.
50. Nuseir, Mohammed T, Aljumah, Ahmad Ibrahim, & El Refae, Ghaleb A. (2022). *Trust in Adoption of Internet of Things: Role of Perceived Ease of Use and Security*. Paper presented at the 2022 International Arab Conference on Information Technology (ACIT).
51. Obeidat, AM, & Otibi, GA. (2015). The impact of knowledge sharing tools on levels of organizational learning (Field Study on Jordanian Commercial Banks). *Australian Journal of Basic and Applied Sciences, 9*(5), 253-267.
52. Pamuji, Slamet, & Limei, Sun. (2023). The Managerial Competence Of The Madrasa Head In Improving Teacher Professionalism And Performance At Mi Al-Maarif Bojongsari, Cilacap District. *Pengabdian: Jurnal Abdimas, 1*(2), 66-74.
53. Poobrasert, Onintra, Luxsameevanich, Sirilak, & Meekanon, Paweena. (2023). Using the Technique of Interaction Design (IxD) and Augmented Reality (AR) as Assistive Technology for Students with Disabilities. *International Journal of Information and Education Technology, 13*(8).
54. Qawaqneh, Haitham, Ahmad, Fadi Bani, & Alawamreh, Ali Ratib. (2023). The Impact of Artificial Intelligence-Based Virtual Laboratories on Developing Students' Motivation Towards Learning Mathematics. *International Journal of Emerging Technologies in Learning (Online), 18*(14), 105.
55. Rahhal, Alaa, Najim, Mostafa, Aljundi, Amer Hussein, Mahfouz, Ahmed, Alyafei, Sumaya Mehdar, Awaisu, Ahmed, . . . Alanzi, Meshaal Ali. (2022). Adding colchicine to tocilizumab in hospitalized patients with severe COVID-19 pneumonia: An open-label randomized controlled trial. *Medicine, 101*(39).
56. Ramayah, T, Ling, Niu Swee, Taghizadeh, Seyedeh Khadijeh, & Rahman, Syed Abidur. (2016). Factors influencing SMEs website continuance intention in Malaysia. *Telematics and Informatics, 33*(1), 150-164.
57. Rashidov, Anvarjon. (2020). Development of creative and working with information competences of students in mathematics. *European Journal of Research and Reflection in Educational Sciences, 8*(3), 10-15.
58. Rawash, Hassan, Alawamreh, Ali Ratib, & Obeidat, Abdallah Mishael. (2023). The Effectiveness of Problem-Based Learning in Acquisition of Knowledge Using Online Learning. *International Journal, 10*(3), 997-1007.
59. Robson, Matthew J, Leonidou, Leonidas C, & Katsikeas, Constantine S. (2002). Factors influencing international joint venture performance: Theoretical perspectives, assessment, and future directions. *MIR: Management International Review*, 385-418.
60. Saffar, N, & Obeidat, A. (2020). The effect of total quality management practices on employee performance: The moderating role of knowledge sharing. *Management Science Letters, 10*(1), 77-90.
61. Saidova, Z. (2023). METHODS OF USING INNOVATIVE EDUCATIONAL TECHNOLOGIES IN INCREASING INTEREST IN LEARNING OF ACADEMIC LYCEUM STUDENTS. *Science and innovation, 2*(B7), 146-154.
62. Saleem, Awaz Naaman, Noori, Narmin Mohammed, & Ozdamli, Fezile. (2022). Gamification applications in E-learning: A literature review. *Technology, Knowledge and Learning, 27*(1), 139-159.
63. Sallam, Malik, Dababseh, Deema, Yaseen, Alaa', Al-Haidar, Ayat, Ababneh, Nidaa A, Bakri, Faris G, & Mahafzah, Azmi. (2020). Conspiracy beliefs are associated with lower knowledge and higher anxiety levels regarding COVID-19 among students at the University of Jordan. *International journal of environmental research and public health, 17*(14), 4915.
64. Sawitri, NLPW, & Giantari, IGAK. (2020). The role of trust mediates the effect of perceived ease of use and perceived usefulness on online repurchase intention. *American Journal of Humanities and Social Sciences Research (AJHSSR), 4*(1), 374-381.
65. Seale, Jane. (2023). It's not all doom and gloom: What the pandemic has taught us about digitally inclusive practices that support people with learning disabilities to access and use technologies. *British Journal of Learning Disabilities, 51*(2), 218-228.
66. Sekaran, U, & Bougie, R. (2010). Theoretical framework in theoretical framework and hypothesis development. *Research methods for business: A skill building approach, 80*, 13-25.
67. Sekaran, Uma, & Bougie, Roger. (2016). *Research methods for business: A skill building approach*: John Wiley & Sons.
68. Shafi, Mohsin, Lei, Zheng, Song, Xiaoting, & Sarker, Md Nazirul Islam. (2020). The effects of transformational leadership on employee creativity: Moderating role of intrinsic motivation. *Asia Pacific Management Review, 25*(3), 166-176.
69. Shin, Yuhyung, Hur, Won-Moo, Moon, Tae Won, & Lee, Soomi. (2019). A motivational perspective on job insecurity: Relationships between job insecurity, intrinsic motivation, and performance and behavioral outcomes. *International journal of environmental research and public health, 16*(10), 1812.
70. Sormunen, Kati, Juuti, Kalle, & Lavonen, Jari. (2020). Maker-centered project-based learning in inclusive classes: Supporting students' active participation with teacher-directed reflective discussions. *International Journal of Science and Mathematics Education, 18*, 691-712.

71. Steiger, James H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate behavioral research, 25*(2), 173-180.
72. Sun, Yanyan, & Gao, Fei. (2020). An investigation of the influence of intrinsic motivation on students' intention to use mobile devices in language learning. *Educational Technology Research and Development, 68*, 1181-1198.
73. Tahar, Afrizal, Riyadh, Hosam Alden, Sofyani, Hafiez, & Purnomo, Wahyu Eko. (2020). Perceived ease of use, perceived usefulness, perceived security and intention to use e-filing: The role of technology readiness. *The Journal of Asian Finance, Economics and Business (JAFEB), 7*(9), 537-547.
74. Viswasom, Angela A, & Jobby, AbrAhAm. (2017). Effectiveness of video demonstration over conventional methods in teaching osteology in anatomy. *Journal of clinical and diagnostic research: JCDR, 11*(2), JC09.
75. Xie, Haoran, Hwang, Gwo-Jen, & Wong, Tak-Lam. (2021). Editorial note: from conventional AI to modern AI in education: reexamining AI and analytic techniques for teaching and learning. *Journal of Educational Technology & Society, 24*(3).
76. Zhang, Yan, & Liu, Sheng-Ming. (2022). Balancing employees' extrinsic requirements and intrinsic motivation: A paradoxical leader behaviour perspective. *European Management Journal, 40*(1), 127-136.