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The Effect of the Usability of Inclusivity-Based Learning Media on Users' Perceptions: A Study Using the System Usability Scale (SUS)

Pengaruh Kegunaan Media Pembelajaran Berbasis Inklusivitas terhadap Persepsi Pengguna: Studi dengan Sistem Skala Kegunaan (SUS)

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Abstract

This study examines the perceived usability and its influence on user attitudes toward an inclusive learning media developed using Canva, deep learning, and Heyzine flipbook applications. Employing a quantitative approach with surveys and the System Usability Scale, data were collected from teachers and students in inclusive elementary schools. The results indicate high usability scores, perceived usefulness, and engagement levels, demonstrating the effectiveness of the media in supporting inclusive education practices. These findings align with existing theories on technology acceptance, emphasizing the importance of user-centered design in educational innovation. The research highlights the potential of integrating interactive multimedia tools to enhance learning experiences for diverse learners. It underscores the need for ongoing development informed by user feedback to ensure long-term adoption. This contribution offers practical insights for educators and developers aiming to create accessible and engaging digital learning environments. Overall, the study reinforces the critical role of usability in fostering positive perceptions and active participation in inclusive education settings

Keywords: *Digital media, deep learning, inclusivity education, System Usability Scale (SUS).*

Abstrak

Penelitian ini mengkaji persepsi *usability* dan pengaruhnya terhadap sikap pengguna terhadap media pembelajaran inklusif yang dikembangkan dengan memanfaatkan platform Canva, algoritma *deep learning*, dan aplikasi *Heyzine flipbook*. Pendekatan kuantitatif digunakan dalam penelitian ini melalui survei dan instrumen *System Usability Scale (SUS)*, dengan pengumpulan data dilakukan dari guru dan peserta didik yang berpartisipasi di sekolah dasar inklusif. Hasil penelitian menunjukkan bahwa media tersebut memperoleh skor *usability* yang tinggi, serta dipersepsikan memiliki tingkat kegunaan dan keterlibatan yang tinggi pula, yang secara jelas memperlihatkan efektivitasnya dalam mendukung praktik pendidikan inklusif. Temuan ini sejalan dengan teori-teori yang sudah ada terkait penerimaan teknologi, yang menekankan pentingnya prinsip desain berpusat pada pengguna dalam inovasi pendidikan. Penelitian ini menyoroti potensi pengintegrasian alat multimedia interaktif untuk meningkatkan pengalaman belajar peserta didik yang beragam, serta menegaskan perlunya pengembangan berkelanjutan yang memperhatikan *feedback* dari pengguna guna mendukung adopsi jangka panjang. Kontribusi ini menawarkan wawasan praktis bagi pendidik dan pengembang yang bertujuan menciptakan lingkungan belajar digital yang dapat diakses dan menarik. Secara keseluruhan, studi ini memperkuat peranan sentral *usability* dalam membangun persepsi positif dan partisipasi aktif dalam konteks pendidikan inklusif.

Kata Kunci: Media digital, pembelajaran mendalam, pendidikan inklusif, *System Usability Scale* (SUS).

1. Introduction

Current developments in educational technology show a rapid trend in the use of digital innovations to improve the quality of the learning process. The use of technology-based learning media has become a crucial aspect in efforts to achieve inclusive and equitable education. Digital media can meet the diverse needs of learners, including those with special needs, and address inclusivity comprehensively (ALomari et al., 2023; Kocdar & Bozkurt, 2023; Susanto et al., 2022). Inclusivity in education is defined as the effort and commitment to ensure that all students, without exception, can access, actively participate in, and derive optimal benefits from the teaching and learning process (Ainscow, 2020; Jardinez & Natividad, 2024). The main challenge is the diversity of students' needs and abilities, which requires diverse, adaptive approaches to ensure an effective, efficient learning process (Gallagher & Savage, 2023). Therefore, the development of inclusive learning media capable of effectively reaching all students has become a priority and continues to receive attention from educators and technology developers, to overcome existing barriers and ensure its success in the field.

With rapid advancements in artificial intelligence (AI) and *deep learning*, digital learning media can be developed to be more interactive and adaptive to learners' individual characteristics. *Deep learning*, as part of AI, can process complex data and immediately provide personalized recommendations to users, including in an educational context (Munir et al., 2022). This technology enables the creation of innovative solutions that enhance the learning experience and optimally support each student's specific needs. Additionally, *platforms* like Canva and *flipbook* apps such as *Heyzine* facilitate the creation of engaging and interactive learning materials without requiring advanced technical skills from users. These technology-based media not only enrich students' learning experiences and create a more inclusive educational environment but also expand access for users from diverse backgrounds and varying levels of ability (Gibson et al., 2023). However, the success of implementing these media does not depend solely on technological innovation but is also significantly influenced by how effectively the media are used by users in diverse contexts; aspects *of usability* thus become a key indicator in assessing the extent to which the media are accepted, used, and have a positive impact on the learning process.

The most popular and widely used instrument for measuring *usability* is the *System Usability Scale* (SUS), known for its simplicity and for providing accurate, reliable data on users' perceptions of system usability (Vlachogianni & Tselios, 2022). Thus, the SUS is a highly relevant instrument for assessing and ensuring that the developed learning media can offer a comfortable, efficient, and satisfying experience for its users. Based on recent literature reviews, it has been shown that *usability* levels significantly influence user perceptions and can motivate users to use the media actively, thereby enhancing the overall effectiveness of the learning process (Bettayeb et al., 2020; Vlachogianni & Tselios, 2022). Research indicates that user-friendly interactive media can significantly enhance student engagement and the success of inclusive learning (Kulal et al., 2024; Luo, 2024; Ashril et al.,2024). However, there remains a lack of in-depth studies examining the influence of *usability* perceptions on users' attitudes and behaviors toward inclusive educational media created using *deep learning* technology and digital platforms such as Canva and Heyzine. This approach holds great potential as an innovation in modern education by integrating creative, innovative, and accessible AI technology for all segments of society. The novelty of this research lies in integrating *deep learning* technology, Canva-based digital media, the Heyzine *flipbook* application, and *usability* measurement via the SUS within a single comprehensive research framework. This combination aims to provide new insights into the key factors influencing the development of innovative and inclusive educational media in the digital age, with significant implications for future learning practices.

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Based on the above discussion, this study aims to examine the influence of perceptions *of the usability* of inclusive learning media on user perceptions, using *the System Usability Scale* (SUS) as a reliable measurement tool to collect valid and reliable data regarding users' perceptions of the developed media. This study not only aims to measure the ease and comfort of using the media but also seeks to analyze how *usability* perceptions influence users' attitudes and motivation regarding the effectiveness and sustainability of the media. The ultimate goal is to make a scientific contribution that supports the development of innovative, user-friendly, and inclusive technology-based educational media that produce more effective learning outcomes, particularly for learners from diverse backgrounds. The main innovation of this study lies in integrating *deep learning* technology, Canva-based digital media, the Heyzine *flipbook* application, and *usability* measurement via the SUS within a comprehensive research framework. This approach is expected to yield new insights into the key variables that influence the successful implementation of innovative and inclusive educational media in the rapidly evolving digital era.

2. Literature Review

2.1 The Role of Digital Learning Media in Inclusive Education

Digital learning media play a crucial role in supporting and achieving equitable, high-quality, inclusive education. This technological innovation can provide various accessibility and personalization features that are not possible with conventional media (Chuang et al., 2020). Additionally, digital media allows for the adaptation of learning materials to meet the needs of students with diverse backgrounds, including those with special needs. Recent research indicates that inclusively designed digital media offers significant benefits in enhancing the motivation and active participation of students with special needs (Hsu & Chen, 2023). In fact, the diversity of multimedia features, such as interactivity, gamification, and augmented reality, can comprehensively and profoundly enhance the learning experience (Anggraeni, 2022). Therefore, the development of digital media is no longer merely an innovation but a necessity to ensure equitable and fair learning outcomes.

Digital learning media meet the need for flexibility and broad access, which are crucial in inclusive education. Through digital *platforms*, educators can integrate diverse learning resources tailored to various learning styles and student needs (Ali et al., 2024). Research findings indicate that digital media can bridge the various physical and psychological barriers faced by students with special needs, thereby helping them feel more confident and motivated to participate in learning activities actively (Chuang et al., 2020). The freedom to access materials anytime and anywhere enhances the effectiveness of the learning process, reducing geographical and socioeconomic barriers. More importantly, digital media serves as a tool that facilitates inclusive communication and collaboration, making the learning environment feel more open and enjoyable (Inayah & Prasetyo, 2025). Therefore, the role of digital media as a support for inclusive education should be a priority in national and institutional education policies.

The implementation of inclusive digital media in education also enhances the sustainability and effectiveness of the national education system. By leveraging technological advancements such as artificial intelligence and big data, media can be personalized to meet students' specific needs, resulting in a more effective and enjoyable learning experience. The development of these media must follow the principles of user-centered design, ensuring that they are easily accessible and understandable to all groups (Chuang et al., 2020). The use of inclusive digital media helps reduce disparities in educational resources and quality, while providing equal opportunities for all students to reach their full potential. With the strengthening of digital literacy and continuous

training for educators, these media will become increasingly effective in supporting the implementation of equitable, high-quality, inclusive education (O.E.C.D., 2020). Therefore, in the future, digital media must become an integral part of a sustainable and inclusive national education strategy.

2.2 The Concept of Media Usefulness and User Perception

Perceived usefulness is a key factor in the Acceptance and Usage theory across recent literature and plays a vital role in the adoption of digital media in education (Venkatesh, 2022). Perceived usefulness describes the extent to which users believe that using the media will enhance the effectiveness and efficiency of their teaching and learning processes (Wiradharma et al., 2021). In the context of inclusive education, this perception is particularly important as it pertains to the perceived long-term benefits for the success of the learning process among diverse students (Parkhouse et al., 2022). Recent studies indicate that high perceived usefulness positively correlates with the level of media adoption and its sustainability in real-world practice (Wulandari, 2024). Therefore, media development must create a strong perception of benefits to enhance motivation, commitment, and the success of media implementation.

In addition to functional aspects, perceived usefulness is also linked to the long-term emotional and cognitive benefits users experience. When students and educators perceive that digital media meet or even exceed their expectations, positive perceptions of long-term benefits increase substantially (Wang et al., 2023). Feelings of satisfaction, confidence, and comfort in using digital media also contribute to the success and sustainability of its use in teaching and learning activities (Rizqiyah et al., 2025). Media development must incorporate relevant and beneficial features and reduce barriers to use to enhance perceptions of usefulness optimally. Recent studies suggest that a strong perception of usefulness will reinforce positive attitudes and accelerate technology adoption in educational settings, including in the context of inclusivity (Kesuma, 2021). Thus, the perception of usefulness is not only a key factor in media development but also an indicator of its success.

The role of perceived usefulness in the learning process is increasingly supported by empirical studies showing a positive relationship with user satisfaction levels and active participation (Mahande, 2023). When students and educators feel that digital media functions effectively and provides tangible benefits, they tend to be more motivated and active in the learning process (Kong & Wang, 2021). A positive attitude toward digital media then motivates broader adoption and sustained use, which supports the long-term success of inclusive education programs. Researchers emphasize that development strategies must address these perceptions by designing solutions that are effective and relevant to user needs (Khan & Nadeem, 2024). Therefore, a deep understanding of perceived usefulness can serve as the foundation and a key indicator in evaluating the effectiveness of digital media for inclusive education. Ultimately, positive perceptions of usefulness will help enhance the success and sustainability of educational technology innovations.

2.3 The *System Usability Scale* (SUS) as a *Usability* Measurement Instrument

The System Usability Scale (SUS) is one of the most widely used instruments in *usability* evaluation, particularly in testing digital media and interactive systems (Kesuma, 2021). The main advantages of the SUS lie in its ease of administration, speed of measurement, and high reliability across various testing contexts (Venkatesh, 2022). In the field of education, the SUS is used to measure the extent to which a system meets user expectations regarding the ease, comfort, and efficiency of using digital learning media (Vlachogianni & Tselios, 2022). The use of the SUS allows researchers and developers to obtain objective data that can serve as a basis for improving the media, thereby increasing user acceptance and retention. Additionally, SUS scores can be analyzed using various statistical techniques, such as correlation and regression analyses, to reveal

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relationships between *usability* and other variables, including perceived usefulness and satisfaction (Vlachogianni & Tselios, 2022). Based on these advantages, SUS is the primary choice for quickly and accurately measuring *usability* quality across various types of educational media.

In addition to its practical advantages and validity, the SUS provides a comprehensive overview through scores that can be quantitatively analyzed and empirically demonstrate the level of user acceptance of digital media (Raffaghelli et al., 2022). Consistently high SUS scores indicate that the evaluated system or digital media has high user acceptance and meets key *usability* criteria, including ease of use, consistency, and comfort. Recent research also shows that high SUS scores positively correlate with long-term adoption and user satisfaction in the development of digital educational media (Knight-Manuel et al., 2019). Furthermore, measurement via SUS can be used as a diagnostic tool to identify specific system weaknesses and guide targeted improvements (Vlachogianni & Tselios, 2022). Ultimately, SUS, as a *usability* measurement instrument, can provide valid and reliable data in assess the success of inclusive educational media development.

2.4 The Influence of *Usability* on User Perception and Behavior

Usability has a direct and significant influence on users' positive perceptions and attitudes regarding the use of digital systems or media in education (Alshar'e et al., 2022). According to recent research, high *usability* enhances perceptions of usefulness and comfort, which in turn, foster positive attitudes toward the media and motivate sustained use (Venkatesh, 2022). In the context of inclusive education, media with good *usability* can reduce technical and psychological barriers, which are often the primary factors preventing students from utilizing media optimally (Hariyanto et al., 2020). Findings indicate that users tend to feel more confident and satisfied when the media they use has an intuitive design and is easy to operate (Manuel et al., 2025). These results confirm that improved *usability* directly contributes to higher engagement, active participation, and overall learning success.

The positive relationship between *usability* and user behavior is not only empirical but is also influenced by psychological and emotional factors such as self-confidence and comfort. Recent studies show that users who find the media easy to use tend to participate more actively and are more enthusiastic about the learning process (Manuel et al., 2025). This active engagement can reduce anxiety and emotional barriers that typically arise when using new media, thereby accelerating the adaptation process (Handayani, 2021). The use of media with high *usability* will reinforce positive perceptions of long-term benefits and foster user loyalty in using such media. Therefore, in the development of digital media, the aspect *of usability* must be prioritized, as it has great potential to enhance positive perceptions and shift user behavior toward more constructive and active directions (Vlachogianni & Tselios, 2022). Ultimately, *usability* becomes a key element in building an adaptive, sustainable, inclusive educational ecosystem.

3. Research Method

This study employs a quantitative research design with a descriptive and correlational approach to analyze the influence of *usability* perceptions on users' attitudes toward inclusive learning media. This design was chosen for its ability to measure variables related to usability and perception systematically, and to test the relationships among these variables through hypothesis testing (Ferreira et al., 2020). The research model is a cross-sectional survey, in which data are collected at a specific point in time directly from the research subjects (Maier et al., 2023). The primary focus of the study is to obtain an understanding of users' perceptions regarding the *usability*

level of the developed media and its influence on their attitudes and perceptions regarding the media's effectiveness in supporting inclusive education.

The research subjects consisted of 150 teachers and 50 students from several inclusive elementary schools located in the city of Bandung. The inclusion criteria for teachers were those with prior experience using digital media in learning activities, while for students, it included those with varying abilities, including those with special needs. The sampling technique used was *purposive sampling*, aimed at ensuring that the selected participants had relevant experience and understanding of the use of digital media, thereby ensuring high validity of the collected perception data. The research was conducted in a school setting, where the developed learning media Canva-based content integrated with *deep learning* algorithms and *Heyzine flipbook* modules-served as the primary learning resources. This setting enabled direct observation of user perceptions in a real-world educational context.

This study employs a quantitative approach with an explanatory design to examine the relationship between media *usability* and perceptions of its effectiveness within the context of inclusive learning. The methodological stages were systematically carried out through four main phases: (1) Media Development, (2) Instrument Testing and Validation, (3) Implementation, and (4) Data Collection and Analysis.

3.1 Media Development Phase

The learning materials were developed in accordance with the principles of Universal Design for Learning (UDL) serves as a cornerstone of inclusive education. Three platforms were used to create variety and cater to diverse learning modalities. Canva was utilized to design clearly and structured visual materials. An Instagram-based Deep Learning The application was used to present micro-content and facilitate familiar social interactions. Meanwhile, Heyzine Flipbook is used to create digital book simulations that are easy to navigate and accessible. The The development process is iterative, involving an initial review by experts to ensure alignment with inclusivity principles before pilot testing.

3.2 Instrument Testing and Validation Phase

Before full implementation, a pilot study was conducted on the media and data collection instruments.

a. Media Testing

The media were tested on a limited sample (n=10) representative of the target population's characteristics. The objective was to identify technical bugs and initial usability issues for revision.

b. Instrument Validation and Reliability

The study used two structured questionnaires: System Usability Scale (SUS): A standard instrument adopted without modification. The SUS consists of 10 statement items measured on a 5-point Likert scale (1=Strongly Disagree to Agree 5=Strongly). Conceptually, the SUS measures two dimensions of usability confirmed through factor analysis: Usability, related to efficiency, ease of use, and consistency; and Learnability, related to the speed at which users reach an initial proficiency level. The construct validity and reliability of the SUS have been extensively tested in the literature.

c. Questionnaire on Perceived Effectiveness of Inclusive Media

This questionnaire consists of 15 items using the same 5-point Likert scale. It is designed to measure four main dimensions: accessibility, engagement and relevance, support for understanding, and flexibility and responsiveness to diversity. This instrument underwent content validity testing by two experts: an inclusive education specialist and a learning technology specialist. Items deemed less relevant or unclear were revised based on the experts' feedback. Subsequently, the pilot test results were analyzed using Cronbach's Alpha, yielding a coefficient of 0.87, indicating a very high level of internal consistency ($\alpha > 0.70$).

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3.3 Implementation Phase

The media, revised based on *the pilot test*, was implemented in an actual learning setting over two weeks. During this period, students used the media as an integral part of teaching and learning, enabling deep, contextual interactions

3.4 Data Collection and Analysis Phase

At the conclusion of the implementation, data were collected from respondents via questionnaires distributed in both digital (online) and printed (offline) formats to ensure accessibility and inclusive participation. The data were then analyzed using SPSS software. Descriptive statistical analysis was used to describe the respondent profile; the SUS usability score was calculated using a standard algorithm with a range of 0-100 and the mean values for each dimension of perceived effectiveness were reported. Next, inferential statistical analysis was conducted to test the research hypotheses, including Pearson's correlation test to measure the strength and direction of the linear relationship between the total SUS score and the perceived effectiveness score, as well as simple linear regression analysis to determine the extent to which the usability variable influences the perceived effectiveness variable. Before the analysis was conducted, classical assumptions such as normality, linearity, and homoscedasticity were first tested.

All procedures were conducted in accordance with research ethics guidelines, including obtaining approval and informed consent from all participants. This methodological framework follows the standards outlined in previous studies (McMeekin et al., 2020) to ensure that the results of this study are robust and can be replicated by other researchers. Detailed explanations regarding the participant selection process, media development, data collection instruments, and analysis techniques are fully documented in the appendix or supporting materials to enhance transparency and confidence in the validity of the study's results.

4. Results and Discussion

4.1. Research Results

Before presenting the research results, the SUS questionnaire consists of 10 statements that measure users' perceptions of the *usability* of the learning media. Respondents rated each statement on a five-point Likert scale from strongly disagree to strongly agree. This instrument examines ease of use, complexity, satisfaction, and the need for assistance in using the media. The table below presents the statements in the SUS questionnaire, along with sample data from teachers and students.

Table.1. SUS Questionnaire Statements and Respondent Ratings

No.	Pernyataan (Pertanyaan)	Responden (n=200)	Skor Rata-Rata	Interpretasi
1	I find the media easy to use.	Teachers	4.2	Very acceptable; users find the media user-friendly.
2	I need a lot of practice before I can use the media.	Teacher	1.6	The perceived level of difficulty is low, indicating ease of learning.
3	The media is quite complex, but I can try using it easily.	Teacher	4.0	Shows a balance between complexity and ease of use.

No.	Pernyataan (Pertanyaan)	Responden (n=200)	Skor Rata-Rata	Interpretasi
4	I feel frustrated when using the media.	Teacher	1.4	Minimal frustration was reported.
5	I feel comfortable using the media.	Teacher	4.3	A high level of comfort was reported.
6	I need help operating the media.	Teacher	1.8	Most teachers do not feel they need assistance.
7	The media is consistent and reliable when used.	Teachers	4.2	Consistency is valued by users.
8	It takes a long time to understand how to operate the media.	Teacher	1.5	Respondents demonstrated quick understanding.
9	I feel that media is easy to learn.	Teacher	4.1	Short learning curve, positive *usability* perception.
10	I am satisfied and the media meets my expectations.	Teacher	4.4	High level of satisfaction.

Note: Scores above 3.5 indicate an acceptable level of *usability*; scores close to 5 indicate a very good level of *usability*.

The average SUS score from teachers' and students' responses was 78.5, indicating that the media was perceived as very easy to use. Additionally, the data shows that 88% of teachers considered the media very helpful in supporting inclusive education practices. In comparison, 82% of students reported high levels of engagement, largely due to the media's interactive features. These findings are summarized in the following table:

Table.2. Summary of Key Variables and Respondents

Variabel	Responden	Skor Rata-Rata	Persentase (%)
Usability (SUS score)	Teachers	78.5	—
Usability (SUS score)	Students	77.2	—
Perception of usefulness	Teachers	87 (scale 0–100)	88% consider it useful
Perceived usefulness	Students	85 (on a scale of 0–100)	82% found it very useful
Level of engagement	Teachers	4.2 (scale 1–5)	84% scored >4 (high)

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Variabel	Responden	Skor Rata-Rata	Persentase (%)
Engagement rate	Students	4.4 (on a scale of 1–5)	86% scored >4 (high)

Note: The percentages for perceived usefulness and engagement are calculated based on the number of respondents who rated the media as "useful" or "very high" (score >4).

High SUS scores indicate that the developed inclusive learning media demonstrate excellent *usability*, consistent with previous findings stating that high *usability* significantly influences users' positive attitudes (Wagner, 2023). Teachers and students rated the media as easy to access and use, which positively affected their perceived usefulness and engagement. The high level of engagement, supported by interactive features, underscores the importance of *usability* in fostering motivation and active participation among students with diverse needs (Akram & Li, 2024). On the other hand, some minor challenges reported regarding unfamiliarity with certain features highlight the need for ongoing training and support to maximize the benefits *of usability* (Freitas et al., 2022). Overall, these results reinforce the idea that well-designed, user-friendly educational media can foster positive perceptions and enhance inclusivity in learning environments. Further research is recommended to investigate more specific training interventions and to develop detailed *usability* guidelines to optimize the user experience.

4.2 Discussion

The high average SUS scores 78.5 from teachers and 77.2 from students indicate that the developed media is perceived as having a very high level of *usability* by both user groups. These scores consistently exceed the generally established threshold of 70, indicating that the media meets acceptance standards in the context *of usability* (Hariyanto et al., 2020). These results suggest that the media design effectively meets user expectations, particularly in terms of ease of use, intuitive navigation, and high accessibility. This practically demonstrates that both teachers and students find the media simple and user-friendly enough to operate without requiring intensive training or special assistance. Reliance on extensive training can be avoided, which is a crucial aspect in an inclusive learning environment comprising students with diverse levels of technological proficiency (Saenan et al., 2024). Users' ability to operate the platform independently enables broader implementation without barriers related to training or specific technical support. Thus, this platform has the potential to accelerate technology adoption across various educational contexts, particularly in environments prioritizing inclusivity.

Furthermore, positive perceptions regarding the media's usefulness were also significantly measured, with 88% of teachers and 82% of students evaluating the media as a helpful tool that provides tangible benefits in inclusive educational practice. This perception is the primary factor motivating users to actively implement the media in daily learning processes, as they believe it can effectively support the achievement of pedagogical goals. This assessment further reinforces the principle that perceived usefulness is one of the primary determinants in the technology adoption process, as per the Technology Acceptance Model (TAM), which asserts that perceived benefits are the primary predictors of the acceptance and use of an innovation (Sharma, 2023). When users not only feel that the media functions optimally but also perceive it as providing meaningful benefits, they are highly likely to continue using it consistently rather than engaging in temporary use. Furthermore, a positive perception of usefulness can create a domino effect, leading to exponential increases in motivation and commitment to using the media, thereby supporting its long-term success. Thus, a high perception of usefulness is a key indicator of the success of media development that effectively and sustainably supports inclusive education.

The finding that *perceived usefulness* and engagement were also very high (both >82%) forms a synergistic configuration, reinforcing the *Technology Acceptance Model* (TAM) postulate that *perceived ease of use* (as measured by the SUS) is *a* key *antecedent* of *perceived usefulness* and usage attitude (Venkatesh et al., 2022).In the context of inclusivity, this synergy holds profound significance: ease of use removes initial technical barriers. At the same time, a strong perception of benefits arising from relevant content and adaptive features builds intrinsic motivation for sustained engagement. The positive correlations among these three variables align with the research by Li & Singh (2022), which states that an effective inclusive learning environment must simultaneously address accessibility, relevance, and cognitive support. Therefore, these results are not merely a list of positive indicators, but empirical evidence that the UDL and TAM frameworks can be integrated to predict and explain the success of inclusive learning technology adoption.

Collectively, these results confirm that the factors *of usability*, perceived benefits, and engagement levels are interrelated and mutually reinforcing in determining the success of adopting inclusive digital learning media. These three variables are not independent but interact reciprocally to shape users' perceptions and attitudes toward the media. Positive perceptions of these three aspects indicate that the media can address existing gaps in fostering an interactive, participatory, inclusive learning environment (Li & Singh, 2022). Furthermore, high levels of satisfaction also indicate that the media is designed in accordance with users' needs and preferences, thereby reinforcing the principle of user-centered design in the development of educational technology innovations. This principle is crucial because the success of media implementation depends not only on technological factors but also on user satisfaction and comfort, which influence sustained use. Thus, the findings of this study confirm that the development of user-centered media and media oriented toward user needs is a key factor in creating inclusive and effective educational innovations. Therefore, strengthening *usability* and user perception must be a priority in every stage of future media development.

The primary novelty of this study lies in the application of cutting-edge technology with a user-centered approach that not only focuses on technical aspects but also considers users' perceptions and direct experiences in the context of inclusive education. These findings provide strong practical implications for developers and practitioners, affirming that investment in *user-centered* design and rigorous *usability* testing is a prerequisite for creating truly adopted inclusive media. However, this study has limitations that must be acknowledged, including: (1) its *cross-sectional* nature, which cannot capture the evolution of perceptions and long-term impacts; (2) a geographically limited sample, requiring caution in generalizing; and (3) *engagement* measurements relying on self-reports, which could be supplemented with interaction *log* data or direct observation in future studies.

5. Conclusion

This study aims to examine perceptions of usability and their influence on users' attitudes toward inclusive learning media developed using *the* Canva *platform*, *deep learning* algorithms, and the *Heyzine flipbook* application. The results indicate that the media received high *usability* scores and were perceived to have high levels of utility and engagement, clearly demonstrating its effectiveness in supporting inclusive educational practices. The analysis results indicate a positive correlation between *usability* and user perception: higher *usability* levels are associated with more positive user perceptions of the learning media. This media is also perceived as a useful tool that captures attention, thereby empirically confirming its effectiveness in supporting the implementation of inclusive educational practices, which are increasingly in demand in the digital age. Furthermore, these results underscore that technological innovations grounded in user-

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centered design principles can enhance learning experiences and foster *inclusivity in* the educational sphere, particularly in light of diverse learner needs.

Furthermore, the integration of digital innovation with user-oriented evaluation and design principles creates a learning environment that is not only effective and engaging but also widely accessible. The level of engagement and positive perceptions demonstrated by teachers and students indicate that these media are capable of motivating and actively engaging students in inclusive education. The integration of multimedia elements, *deep learning* algorithms, and *user-friendly* features is expected to enhance the creation of enjoyable and meaningful learning experiences significantly. Overall, these results not only reinforce the theoretical argument regarding the importance *of usability* in the adoption of educational technology but also affirm that digital media designed to be inclusive and innovative can serve as a strategic solution in realizing a more equitable and highly competitive education in the future.

This study is expected to serve as a foundation for the development of more comprehensive and adaptive learning materials, while also fostering further innovative approaches capable of meeting the diverse needs of students. Furthermore, in the future, longitudinal studies are anticipated to assess the sustainability of adoption and its impact on measurable *learning outcomes*. Additionally, an in-depth exploration of the perceptions of specific subgroups (e.g., students with certain disabilities) will provide nuanced insights to refine designs and make them more *precise* and inclusive. With continuous development and the application of user-centered design principles, it is hoped that technology-based inclusive media can become an effective solution for expanding access and improving the quality of education across all aspects of student diversity.

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