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Development of Interactive Learning Videos for Slow Learner Students in Inclusive Higher Education

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ABSTRAK

Penelitian ini bertujuan untuk mengembangkan video pembelajaran interaktif bagi mahasiswa slow learner di perguruan tinggi inklusif. Penelitian ini dilaksanakan Universitas PGRI Adi Buana Surabaya dengan subjek penelitian yaitu 2 mahasiswa slow learner yang mengambil mata kuliah Anatomi THT dan Audiologi. Penelitian ini menggunakan metode penelitian pengembangan dengan tahapan: (1) need analysis, (2) product design, (3) product development, dan (4) limited trials. Teknik pengumpulan data yang digunakan adalah kuesioner, sedangkan analisis data menggunakan analisis kuantitatif dengan rumus rata-rata dari penilaian ahli materi, ahli desain, dan subjek mahasiswa. Hasil penelitian ini berupa video pembelajaran interaktif yang dikembangkan dalam format H5P pada LMS VIRLENDA (LMS Universitas PGRI Adi Buana Surabaya).. Hasil uji kelayakan menunjukkan bahwa video tersebut memperoleh skor 3,7 (sangat layak) dari ahli konten, 3,6 (sangat layak) dari ahli media, dan 3,7 (sangat layak) dari pengguna (subjek penelitian). Kelayakan produk yang dikembangkan ditentukan berdasarkan skor hasil validasi ahli, dengan rentang skor rata-rata 3,26 – 4,00 yang menunjukkan bahwa video pembelajaran interaktif berada pada kategori sangat layak**.** Berdasarkan hasil uji kelayakan tersebut, dapat disimpulkan bahwa video pembelajaran interaktif yang dihasilkan dalam penelitian ini layak pada uji coba terbatas dan perlu uji efektivitas yang lebih luas.

ABSTRACT

This study aims to develop interactive learning videos for slow learner students in inclusive higher education. The study was conducted at Universitas PGRI Adi Buana Surabaya, involving two slow learner students enrolled in the ENT Anatomy and Audiology course as research participants. This study employed a research and development (R&D) method with four stages: (1) needs analysis, (2) product design, (3) product development, and (4) limited trials. Data were collected using questionnaires, and data analysis was conducted through quantitative analysis using mean score calculations from evaluations by content experts, media/design experts, and student participants. The research output was an interactive learning video were developed in H5P format and integrated into the VIRLENDA Learning Management System (LMS) of Universitas PGRI Adi Buana Surabaya. The feasibility test results indicated that the video obtained a score of 3.7 (highly feasible) from content experts, 3.6 (highly feasible) from media experts, and 3.7 (highly feasible) from users (research participants). Product feasibility was determined based on expert validation scores, with a mean score range of 3.26 – 4.00 indicating that the interactive learning video was categorized as highly feasible. Based on these feasibility results, it can be concluded that the interactive learning video developed in this study is suitable for limited trials and requires further large-scale effectiveness testing.

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Introduction

Inclusive higher education has increasingly become a strategic priority in Indonesia as part of a broader commitment to equity, diversity, and social justice in education. Universities are no longer viewed solely as institutions that serve academically homogeneous student populations, but rather as learning communities that must accommodate students with diverse abilities, learning characteristics, and educational backgrounds (Sukendar et al., 2024). This paradigm shift aligns with global movements toward inclusive education, which emphasize the right of all individuals to access quality education without discrimination. In this context, higher education institutions are expected not only to open access for students with special needs but also to ensure that learning processes are meaningful, supportive, and responsive to individual differences (Miftahul Jannah, 2021).

The legal framework supporting inclusive higher education in Indonesia is clearly articulated through Law No. 8 of 2016 concerning Persons with Disabilities and the Regulation of the Ministry of Research, Technology, and Higher Education (Permenristek Dikti) No. 46 of 2017. These policies mandate universities to provide reasonable accommodation, inclusive learning environments, and appropriate educational services for students with special needs. However, while regulatory compliance has improved in terms of admission policies and administrative services, challenges remain in translating these legal mandates into inclusive pedagogical practices within classrooms and digital learning environments (Mirnawati et al., 2020).

In many higher education institutions, inclusive education is still predominantly interpreted as physical accessibility or the provision of special services outside the classroom. Pedagogical inclusivity, which directly affects students' learning experiences, often receives limited attention (Ali, 2024). Teaching and assessment practices frequently assume that students possess similar cognitive capacities, learning speeds, and levels of academic independence. This assumption places students with special learning needs at risk of marginalization, as their difficulties may not be immediately visible but significantly influence their academic engagement and performance.

One group of students who often experience such hidden challenges is slow learner students. Slow learners are generally characterized by lower-than-average cognitive processing speed, difficulties in retaining and organizing information, and challenges in understanding abstract or complex concepts. Although they do not meet the criteria for intellectual disability, their learning characteristics require specific instructional strategies and adequate learning support. In higher education contexts, where rapid comprehension and high levels of autonomy are expected, slow learner students may struggle to keep pace with instructional demands (Sintawati et al., 2024).

The academic demands of higher education can intensify the difficulties faced by slow learner students. Lecture-based instruction, dense academic readings, abstract theoretical discussions, and time-limited assessments often disadvantage students who require more time and structured support to process information. Without adaptive learning strategies, these students may experience repeated academic failure, reduced motivation, and declining self-confidence (Listiawati et al., 2023). Over time, such experiences can negatively affect their

persistence and success in higher education, contradicting the fundamental goals of inclusive education.

The rapid digital transformation of higher education, particularly during and after the COVID-19 pandemic, has further reshaped teaching and learning practices. Online and hybrid learning models have become integral components of higher education delivery in Indonesia. While digital learning offers flexibility and broader access, it also introduces new learning demands, such as self-regulated learning, digital literacy, and independent comprehension of learning materials (Mandagani et al., 2022). These demands can be particularly challenging for slow learner students who rely heavily on structured guidance and concrete learning representations.

In online learning environments, instructional materials are often presented in text-heavy formats or through verbal explanations in recorded lectures. For slow learner students, such formats may hinder comprehension, especially when visual support and interactive elements are limited. The absence of immediate feedback and real-time clarification in asynchronous learning further complicates their learning process. As a result, online learning environments that are not inclusively designed risk exacerbating learning gaps rather than reducing them (Winda & Dafit, 2021).

Learning media therefore play a crucial role in supporting inclusive learning processes in higher education. Effective learning media can transform abstract concepts into concrete representations, provide structured learning pathways, and support different learning speeds. For slow learner students, visual-based media are particularly beneficial, as they help reduce cognitive load and facilitate gradual information processing (Akram et al., 2022). Well-designed learning media can also promote learner autonomy while maintaining the structured support that slow learners require.

Interactive learning videos have emerged as a promising instructional medium within digital and blended learning environments. Unlike conventional instructional videos, interactive learning videos allow learners to actively engage with content through embedded questions, visual prompts, feedback mechanisms, and navigational control. These features enable students to pause, replay, and review learning materials according to their individual needs. Such flexibility is especially relevant for slow learner students who benefit from repetition and self-paced learning (Ratnathatmaja & Sujana, 2022).

Despite their potential, interactive learning videos in higher education are often developed for general student populations without specific consideration of students with cognitive-based learning needs. Many videos prioritize content coverage rather than inclusive design principles, resulting in materials that may still be difficult for slow learner students to understand. This highlights the importance of intentional media development that integrates knowledge of learner characteristics, inclusive pedagogy, and instructional design.

In the Indonesian higher education context, research on inclusive digital learning has primarily focused on accessibility for students with sensory disabilities or on general evaluations of online learning effectiveness. Studies that specifically address the learning needs of slow learner students remain limited. This lack of focused research creates a gap between the growing number of slow learner students in inclusive universities and the

availability of learning media that effectively support their academic success (Rosdiana, 2017).

Addressing this gap requires a systematic and research-based approach to learning media development. Interactive learning videos should be designed based on an understanding of slow learner characteristics, including the need for clear visual cues, simplified language, structured content sequencing, and opportunities for repeated practice. Such design considerations ensure that technology serves as a tool for inclusion rather than an additional barrier to learning.

The development of interactive learning videos for slow learner students also aligns with broader quality assurance goals in higher education. Inclusive media design not only benefits students with special needs but also enhances learning clarity and engagement for all students. This approach reflects the principles of Universal Design for Learning (UDL), which emphasize multiple means of representation, engagement, and expression in instructional design.

Furthermore, integrating interactive learning videos into learning management systems allows for flexible implementation across synchronous and asynchronous learning contexts (Tayade et al., 2018). For slow learner students, this integration provides opportunities to revisit learning materials outside scheduled class times, supporting deeper understanding and independent learning (Asmida Rambe et al., 2023). At the institutional level, such innovations contribute to the sustainability of inclusive education practices in higher education.

Therefore, this study focuses on the development of interactive learning videos tailored to the learning characteristics of slow learner students in inclusive higher education in Indonesia. By integrating inclusive educational principles with interactive digital media design, this research aims to improve learning accessibility, engagement, and quality for slow learner students. The findings are expected to offer practical and theoretical contributions to inclusive pedagogy, instructional media development, and the advancement of equitable higher education practices in Indonesia.

Although the importance of inclusive learning media has been widely acknowledged, existing research on interactive learning video development for students with special needs remains unevenly distributed across educational levels. Most empirical studies and development-based research focus on elementary and secondary education contexts, where slow learner students are more commonly identified and supported. In contrast, research addressing the instructional needs of slow learner students in higher education is still limited. This lack of focus creates a research gap, as the learning demands, academic culture, and cognitive expectations in higher education differ substantially from those in school settings.

In higher education, slow learner students face unique challenges related to abstract content, specialized terminology, and discipline-specific learning outcomes (Akbar et al., 2024). However, few studies have explored how interactive learning videos can be systematically developed and implemented to support these students within university-level courses. Existing digital learning research at the tertiary level tends to emphasize general usability, accessibility compliance, or learning outcomes for the overall student population,

rather than addressing the specific cognitive and learning characteristics of slow learner students.

This study addresses this gap by focusing on the development of interactive learning videos specifically designed for slow learner students in inclusive higher education. Unlike previous studies conducted primarily in school contexts, this research situates interactive media development within a university learning environment, where instructional complexity and learner autonomy are significantly higher. By doing so, the study responds to the urgent need for evidence-based inclusive instructional media that are relevant to higher education contexts.

The novelty of this research lies in the design and implementation of interactive learning videos that incorporate embedded questions and immediate feedback using interactive authoring tools such as H5P. These features are intentionally designed to support gradual cognitive processing, reinforce conceptual understanding, and promote active engagement among slow learner students. Embedded question–feedback mechanisms allow learners to check their understanding in real time and revisit learning content as needed, which is particularly beneficial for students who require repetition and structured guidance.

Furthermore, the developed interactive learning videos are fully integrated into the university's Learning Management System (LMS), enabling seamless access within formal academic settings. This integration ensures that inclusive learning media are not treated as supplementary or remedial materials, but as an integral part of the instructional process. In addition, the learning videos are contextualized within a specific university course, namely ENT and Audiology, which involves complex anatomical concepts and specialized terminology that often pose challenges for slow learner students. This course-specific contextualization enhances the relevance, authenticity, and instructional value of the developed media.

By combining inclusive pedagogy, interactive video design with embedded feedback, LMS integration, and course-specific contextualization, this study offers a distinctive contribution to inclusive higher education research. The approach demonstrates how interactive learning media can be strategically developed to meet the cognitive and learning needs of slow learner students while maintaining academic rigor and alignment with higher education learning outcomes. This study aims to develop and validate interactive learning videos with embedded question–feedback features, integrated into a university LMS, to support slow learner students' understanding and engagement in an ENT and Audiology course within inclusive higher education in Indonesia.

Method

This study used a research and development method with the Borg & Gall model modified into four stages: (1) needs analysis, (2) product design, (3) product development and validation, and (4) limited trials (Wahidin, 2025). This approach was chosen because it is in accordance with the research objective, namely to produce interactive video for slow learner students about the Anatomy of Ear, Nose, Throat (ENT) and Audiology subject. The description of the research method in this study is as follows.

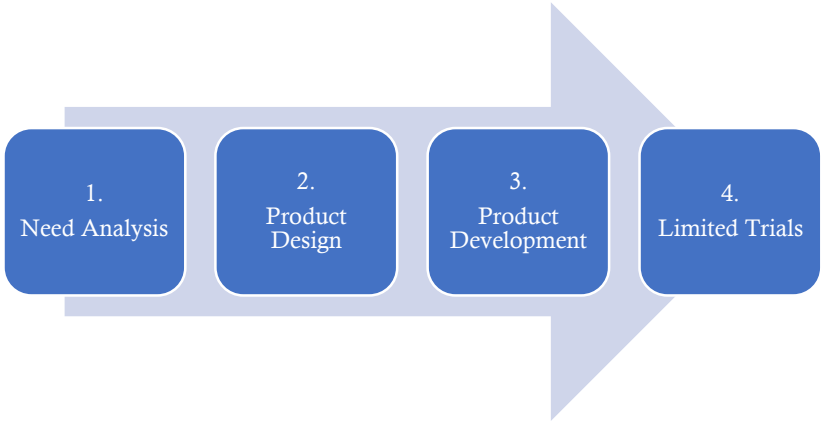

Figure 1 Research & Development Flowchart

Stage 1: Needs Analysis

The needs analysis stage involved key informants, including two slow learner students as the primary participants, the lecturer of the ENT and Audiology course, and the LMS or online learning coordinator. Data were collected using semi-structured interview guidelines, observation sheets of online learning activities, and a learning needs questionnaire. The analysis revealed that slow learner students experienced significant difficulties in understanding abstract concepts and medical terminology when instructional materials were delivered mainly through verbal explanations or text-based formats. The students also expressed the need for learning media that support independent study, allow repeated access to content, and provide immediate feedback to facilitate comprehension. The output of this stage was a structured learning needs profile and a set of criteria for developing interactive learning media aligned with the characteristics of slow learner students in higher education.

Stage 2: Design

Based on the findings from the needs analysis, the design stage focused on developing an instructional design framework for interactive learning videos. This included the formulation of clear and measurable learning objectives, selection of essential content from the ENT and Audiology course, and development of instructional scenarios presented in the form of storyboards. Multimedia design principles were applied, such as the use of relevant visuals, simplified text, synchronization between narration and visual elements, and content segmentation to reduce cognitive load. The design also incorporated interactive elements, including embedded questions and feedback points, to promote active learning and reinforce conceptual understanding. The output of this stage was a complete instructional design document and storyboard ready for development.

Stage 3: Development and Validation

During the development stage, the instructional design was translated into an interactive learning video product. The videos were developed in segmented formats with a duration of approximately 8–12 minutes per topic to accommodate the attention span and processing needs of slow learner students. The product was created using the H5P platform and integrated into the university's Learning Management System (LMS). Interactive features included embedded questions, immediate feedback, flexible navigation, and visual representations through images, animations, and simplified illustrations. Validation was conducted by subject matter experts

and instructional media experts using validation instruments that assessed content accuracy, visual clarity, instructional coherence, and usability. Expert feedback informed product revisions until the videos were deemed appropriate for instructional use. The output of this stage was a finalized, validated interactive learning video.

Stage 4: Limited Trial

The limited trial stage involved two slow learner students as end users of the developed interactive learning videos. The videos were implemented within the ENT and Audiology course through the LMS, both as part of asynchronous learning activities and as supporting materials for synchronous sessions. Students were given access to the videos over a specified period and encouraged to engage with the content independently. After the trial, students completed a user response questionnaire assessing ease of use, clarity of content, usefulness of interactive features, and learning engagement. Short follow-up interviews were also conducted to gather qualitative feedback. The output of this stage consisted of usability data and learner responses used to evaluate the practicality and acceptability of the developed product.

The study participants were divided into two groups: experts and students. The expert group consisted of one material expert and one media expert. Meanwhile, the student group included two alow learner students enrolled in the the Anatomy of Ear, Nose, Throat (ENT) and Audiology subject at PGRI Adi Buana University Surabaya, an inclusive higher education institution. The participants were chosen through purposive sampling, considering the their understanding about the subject. The participants of this study consisted of two slow learner students who voluntarily agreed to take part in the research. Participation was based on informed consent, which was obtained in written form prior to data collection. To ensure ethical compliance, all participant data were treated confidentially and reported anonymously.

Data were collected using questionnaires to assess the product's feasibility. The research instruments consisted of: (1) an expert validation questionnaire designed to evaluate the content and media feasibility aspects using a 4 point Likert scale, and (2) a user readability test conducted with slow learner students.

The expert validation involved two categories of experts: content experts in special education and media experts in educational technology. Content experts were lecturers or heads of study programs with academic backgrounds in special or inclusive education and a minimum of five years of professional experience in teaching, curriculum development, or student support for learners with special educational needs. Their role was to evaluate the appropriateness of learning objectives, content clarity, language simplicity, and alignment with the learning characteristics of slow learner students in inclusive higher education.

Media experts were lecturers or professionals with expertise in educational technology or instructional media development, also possessing at least five years of experience in designing or evaluating digital learning media for higher education. They assessed the technical and instructional quality of the interactive learning videos, including visual design, interactivity, usability, LMS integration, and the effectiveness of embedded question–feedback features. The involvement of both expert groups ensured that the developed media met pedagogical and technological standards for inclusive learning.

The data analysis in this study consisted of three parts: the analysis of material feasibility, media feasibility, and user readability. Each part was analyzed quantitatively and

qualitatively to obtain comprehensive information about the quality and usability of the developed product. The analysis was carried out by collecting expert responses through a practicality questionnaire, which was then analyzed using a Likert scale of 1 – 4, after which calculating the practicality value with the formula contained in this Equation 1

$$Practicality\ Score = \frac{\sum \text{The score obtained}}{\sum \text{The expected score}}\ X\ 100\%$$

After obtaining the practicality results through the predetermined formula, the criteria for the mode used by experts can be known. The categories include very feasible, Feasible, less Feasible, and not Feasible, with a practicality scale presented in Table 1.

Table 1. Product Feasibility Category

Score Range	Feasibility Category
3,26 – 4,00	Very Feasible
2,51 – 3,25	Feasible
1,76 – 2,50	Fairly Feasible
1,00 – 1,75	Not Feasible

Result and Discussion

The developed product is an interactive learning video designed to support slow learner students in inclusive higher education, particularly in the ENT Anatomy and Audiology course. The learning objectives of the video are to help students understand basic anatomical structures and functions of the ear, nose, and throat, as well as fundamental concepts in audiology. The content scope focuses on essential and core materials aligned with the course learning outcomes, presented using simplified language and concrete visual representations to accommodate the learning characteristics of slow learner students.

The interactive learning video was designed using a storyboard that outlines the sequence of content presentation, visual elements, narration, and interactive features. Key interactive components include embedded questions placed at specific segments of the video to reinforce understanding. Screenshots of the interface illustrate features such as navigation buttons, pause-and-replay options, and feedback displays, which allow students to control their learning pace and revisit challenging sections as needed.

In terms of technical specifications, each video segment has a duration of approximately 8–12 minutes to maintain learner attention and reduce cognitive load. The video was developed in H5P format and integrated into the university's Learning Management System (VIRLENDA), which is based on Moodle. This integration enables easy access during both synchronous and asynchronous learning activities and ensures compatibility with existing institutional learning infrastructure.

Examples of embedded questions include short multiple-choice or true–false items related to key concepts, such as identifying anatomical parts or selecting correct functional descriptions. Immediate feedback is provided after each response, indicating whether the answer is correct or incorrect, accompanied by brief explanatory comments. This feedback mechanism is designed to support self-assessment and reinforce conceptual understanding

without overwhelming the learner. The overview of the LMS interface and the developed interactive learning video is presented as follows.

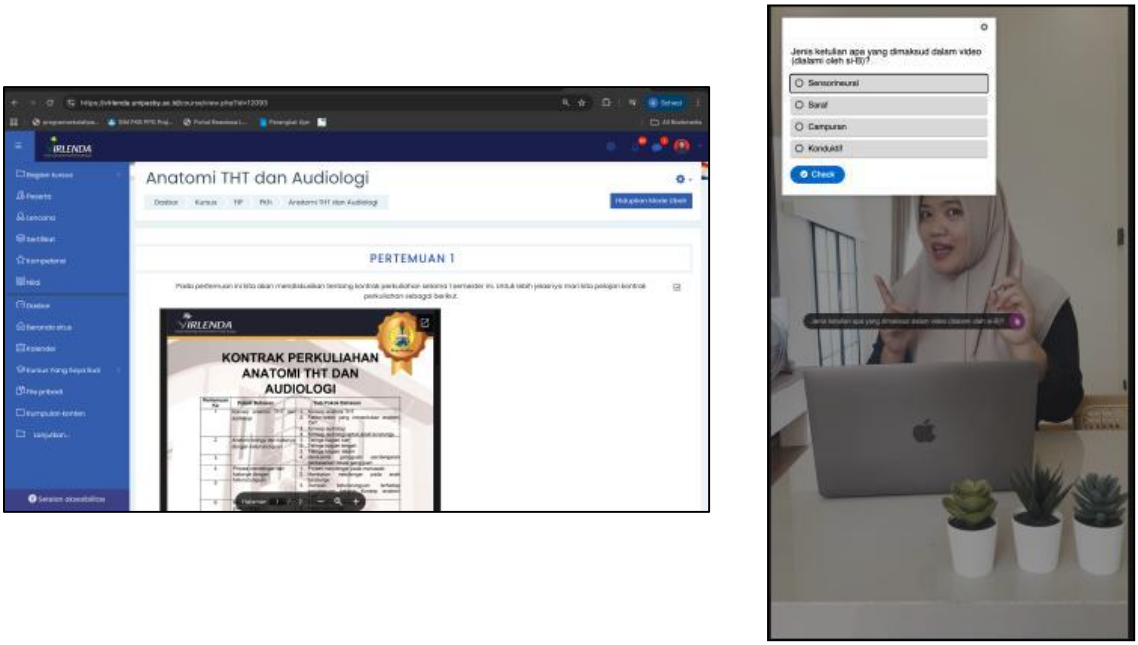

Figure 2 LMS and Interactive Learning Video

Furthermore, to ensure that the developed interactive learning video is of high quality, a product feasibility test was conducted. This feasibility test involved material experts, media experts, and users specifically, slow learner students from the Special Education Study Program at PGRI Adi Buana Surabaya University. The results of the feasibility test are as follows.

1. Content Feasibility

Content feasibility focuses on the accuracy, relevance, and instructional suitability of the learning materials for inclusive higher education. This aspect was evaluated by content experts in special education, who assessed whether the materials align with course learning outcomes and the cognitive characteristics of slow learner students.

Table 2. Content Feasibility Evaluation

No.	Content Aspect	Mean Score	Category
1	Relevance to Learning Objectives	3.7	Very Feasible
2	Content Accuracy	3.8	Very Feasible
3	Content Organization & Sequencing	3.6	Very Feasible
4	Clarity of Concepts	3.7	Very Feasible
5	Suitability for Higher Education	3.7	Very Feasible
		3.7	Very Feasible

The results indicate that the content of the interactive learning video is highly feasible. The material is considered accurate, well-structured, and relevant to the ENT Anatomy and

Audiology course. The sequencing of content supports gradual understanding, which is essential for slow learner students who require structured and coherent explanations.

2. Media Feasibility

Media feasibility refers to the technical and instructional quality of the interactive learning video. This aspect was evaluated by educational technology experts, focusing on design, usability, and interactivity within the LMS environment.

Table 3. Media Feasibility Evaluation

No.	Media Aspect	Mean Score	Category
1	Visual Appearance	3.6	Very Feasible
2	Navigation & Ease of Use	3.5	Very Feasible
3	Interactivity Features	3.7	Very Feasible
4	Embedded Question–Feedback	3.6	Very Feasible
5	LMS Integration (H5P–Moodle)	3.5	Very Feasible
		3.6	Very Feasible

The media evaluation results show that the interactive learning video meets high technical and instructional standards. The visual design is clear and supportive of learning, while navigation allows students to control playback and revisit content. The embedded question–feedback feature effectively promotes active engagement without increasing cognitive load.

3. Suitability for Slow Learner Students

This aspect focuses specifically on the alignment of the developed product with the learning characteristics and needs of slow learner students. The evaluation was conducted by users (slow learner students) through questionnaires and supported by qualitative feedback.

Table 4. Suitability for Slow Learner Students

No.	Suitability Aspect	Mean Score	Category
1	Ease of Understanding	3.7	Very Feasible
2	Support for Self-Paced Learning	3.8	Very Feasible
3	Usefulness of Visual Support	3.8	Very Feasible
4	Clarity of Language	3.6	Very Feasible
5	Learning Motivation & Engagement	3.7	Very Feasible
		3.7	Very Feasible

The results indicate that the interactive learning video is highly suitable for slow learner students. Visual support, segmented content, and immediate feedback help students understand complex concepts more easily. Students also reported that the video allowed them to learn independently at their own pace, increasing confidence and engagement during learning activities.

Based on the expert and user evaluations, all aspects content feasibility, media feasibility, and suitability for slow learner students achieved mean scores within the range of 3.26–4.00, indicating that the developed interactive learning video is categorized as very feasible for use in inclusive higher education.

Table 5. Feasibility Test Scores

No.	Type of Feasibility	Score	Category
1.	Content Expert	3,7	Very Feasible
2.	Media Expert	3,6	Very Feasible
3.	User	3,7	Very Feasible

Based on Table 5, it can be seen that the product's feasibility test results were 3.7 (very feasible) according to content experts, 3.6 (very feasible) according to media experts, and 3.7 (very feasible) according to users (research subjects). Based on these results, it can be concluded that the interactive learning video developed in this study is suitable for use in teaching slow learner students. It is expected that by using this product, slow learner students at PGRI Adi Buana Surabaya University will receive more optimal educational services, particularly during hybrid learning periods.

In addition to feasibility scores, the product revision process was guided by qualitative feedback provided by the content expert in special education and the media expert in educational technology. Based on this feedback, several improvements were implemented to enhance the quality and accessibility of the interactive learning video. These revisions included adjusting font size and type to improve readability for slow learner students, adding clearer illustrative visuals and labeled diagrams to support conceptual understanding, and simplifying language structures to ensure clarity. Furthermore, the learning materials were divided into shorter, well-defined segments to facilitate self-paced learning and reduce cognitive load. Interactive components, particularly embedded questions and feedback, were refined to better align with learning objectives and to provide more explicit guidance for learners during the learning process.

This study aimed to develop and evaluate an interactive learning video designed specifically for slow learner students in an inclusive higher education context. The main findings demonstrate that the developed product achieved high feasibility scores across all evaluated aspects, including content feasibility, media feasibility, and suitability for slow learner students, with average scores ranging from 3.6 to 3.7, which fall within the "very feasible" category. These results indicate that the interactive learning video is not only technically acceptable but also pedagogically appropriate and responsive to the learning characteristics of slow learners at the university level.

The content feasibility score of 3.7 reflects strong alignment between learning objectives, instructional materials, and course content in ENT Anatomy and Audiology. For slow learner students, content relevance and clarity are particularly critical, as fragmented or poorly sequenced materials can hinder comprehension. The high score suggests that the instructional content was structured in a way that supports gradual understanding, emphasizing essential concepts rather than excessive detail. This finding supports the idea

that inclusive higher education should prioritize clarity and relevance over content density, especially for students with slower processing speeds.

Similarly, the media feasibility score of 3.6 indicates that the technical design, navigation, and interactivity of the video were appropriate for the intended users. Ease of navigation and intuitive interface design are especially important for slow learner students, who may struggle with complex digital environments (Chumairo et al., 2022). The use of H5P within the institutional LMS allowed seamless integration and familiar access, reducing extraneous cognitive load related to platform use. This confirms that inclusive digital learning environments must consider not only accessibility features but also simplicity and consistency in media design (Wahyuni et al., 2024).

The highest relevance of the findings emerges from the suitability score for slow learner students, which reached an average of 3.7. This score reflects positive user responses regarding ease of understanding, visual support, self-paced learning, and motivation. For slow learners, instructional materials must accommodate differences in learning speed, attention span, and memory retention (Fatmawati et al., 2025). The high suitability score suggests that the interactive learning video effectively addressed these needs through intentional design choices rather than generic multimedia enhancements (Wahyuningtyas et al., 2020).

One of the most significant features discussed in relation to the findings is the use of embedded questions with immediate feedback. For slow learner students, delayed feedback can reinforce misconceptions and reduce confidence. Immediate feedback enables learners to identify errors at the moment they occur and to adjust their understanding accordingly (Priyanti & Manuaba, 2022). This feature supports formative learning processes and self-regulation, which are often challenging for slow learners in higher education contexts (Malik & Nugraheni, 2020).

The feasibility scores related to interactivity and feedback suggest that this design element was both usable and meaningful. Rather than overwhelming learners with extensive explanations, the feedback provided concise corrective or confirmatory messages. This approach aligns with principles of effective feedback, which emphasize clarity, timeliness, and relevance (Gulo et al., 2024). The implication is that interactive videos with embedded feedback can serve as a form of scaffolding, allowing slow learner students to learn independently while still receiving structured guidance (Ardana & Lestari, 2024).

Another important aspect highlighted by the findings is the segmentation of learning content into short, focused sections. Slow learner students often experience cognitive overload when presented with long lectures or dense explanations (Winel et al., 2023). The chunking strategy applied in this video allows learners to process information incrementally, supporting sustained attention and deeper understanding.

This approach aligns with Mayer's segmenting principle, which posits that learners benefit from having control over the pace of information presentation. The positive feasibility ratings suggest that students and experts perceived the segmented structure as supportive rather than disruptive. For slow learners, this design choice has significant implications: it allows repetition, review, and mastery of one concept before progressing to the next, which is essential for long-term retention (Cablas, 2023).

The integration of visual elements, such as labeled diagrams and illustrative images, alongside verbal explanations is another key factor contributing to the high feasibility scores. Slow learner students often rely more on visual processing to understand abstract or technical concepts, particularly in courses such as Anatomy and Audiology. The combination of visual and verbal information supports dual coding, enabling learners to build multiple mental representations of the same concept (Noor et al., 2014).

The findings indicate that visual support was perceived as highly useful, particularly in helping students identify anatomical structures and understand functional relationships. This reinforces the importance of visual–verbal integration in inclusive higher education, especially for students who struggle with purely textual or auditory explanations (Fatimah et al., 2018); (Bakhtiar Al-Anshori et al., 2025). The implication is that interactive videos should not merely present visuals for decoration but should strategically use them to clarify and reinforce key concepts.

Repetition emerged as an implicit but important feature of the developed video. Through the ability to replay segments and revisit embedded questions, slow learner students were able to reinforce their understanding without feeling pressured by time constraints. The feasibility scores related to self-paced learning indicate that this feature was well received by users (Maina & Kihoro, 2017) (Hidayati & Rafikayati, 2024).

Self-paced learning is particularly relevant in higher education, where students are often expected to learn independently. For slow learners, this expectation can become a barrier if instructional materials do not allow flexibility. The findings suggest that interactive videos can bridge this gap by offering structured yet flexible learning opportunities (Peachey & Langlois, 2015). This has important implications for inclusive teaching practices, as it demonstrates how technology can support learner autonomy while still accommodating individual needs.

In addition to feasibility scores, qualitative feedback from experts played a crucial role in refining the product. Revisions such as improving font readability, adding clearer illustrations, and further segmenting content reflect an iterative development process grounded in both quantitative and qualitative evaluation. This combination strengthens the validity of the product and ensures that it responds to real learner needs rather than abstract design standards (Wardani & Prahmana, 2021).

The inclusion of expert feedback highlights the importance of multidisciplinary collaboration in developing inclusive learning media. Input from special education experts ensured alignment with the cognitive characteristics of slow learners, while media experts contributed to technical quality and usability (Okterina et al., 2025). This collaborative approach enhances the overall quality of the product and serves as a model for future development efforts in inclusive higher education (Rafikayati & Prawoto, 2022).

The findings of this study have several implications for inclusive higher education in Indonesia. First, they demonstrate that interactive learning videos can be a viable instructional medium for slow learner students when designed intentionally. Second, they highlight the importance of aligning multimedia features with learner characteristics rather than relying on generic technological solutions. Third, they suggest that feasibility evaluation

should consider not only expert judgment but also user experiences, particularly those of students with special learning needs.

At a broader level, this study supports the argument that inclusivity in higher education is not solely a matter of policy or access, but also of pedagogical design (Aziz et al., 2021). By integrating immediate feedback, segmentation, visual support, repetition, and self-paced learning, educators can create learning environments that are more equitable and responsive to diversity.

Despite its positive findings, this study has limitations that should be acknowledged. The limited number of participants restricts the generalizability of the results. Future research should involve larger samples and diverse courses to examine the effectiveness of interactive learning videos across disciplines. Additionally, while this study focused on feasibility, further research is needed to evaluate learning effectiveness and long-term learning outcomes for slow learner students.

In summary, the high feasibility scores and positive qualitative feedback indicate that the developed interactive learning video is well suited to support slow learner students in inclusive higher education. The findings underscore that the value of interactive media lies not in technology itself, but in how its features are pedagogically aligned with learner needs. Through careful design and evaluation, interactive learning videos can become a powerful tool for promoting equity, autonomy, and meaningful learning for slow learners in higher education settings.

Conclusion

The result of this study is an interactive learning video designed with embedded questions and answers that provide immediate feedback to users, enabling them to actively engage with the material and monitor their understanding throughout the learning process. The feasibility test of the video showed a score of 3.7 (very feasible) according to content experts, 3.6 (very feasible) according to media experts, and 3.7 (very feasible) according to users (research subjects). The integration of embedded questions with immediate feedback, segmented content, visual–verbal support, repetition, and self-paced learning effectively addresses the learning characteristics of slow learners. Practically, these findings suggest that lecturers can utilize LMS-integrated interactive videos to support clearer content delivery and student engagement, while institutions are encouraged to optimize LMS features to facilitate inclusive and adaptive learning environments.

However, this study is limited by a small number of participants and a restricted trial scope within a single course context. Therefore, the findings cannot yet be generalized to broader populations. Future research is recommended to examine learning effectiveness through experimental designs such as pretest–posttest models, to implement the developed media in different courses or disciplines, and to conduct wider usability testing involving larger and more diverse student groups. These efforts are necessary to strengthen evidence on the effectiveness and scalability of interactive learning videos for slow learner students in inclusive higher education.

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