Vol 13 No 1 : January 2025

JDPP

Jurnal Dimensi Pendidikan dan Pembelajaran

ISSN 2303-3800 (Online), ISSN 2527-7049 (Print)

https://journal.umpo.ac.id/index.php/dimensi/index

Development of Interactive Multimedia Modules to Support Inclusive Education in the Learning Planning for Children with Special Needs Course

Lutfi Isni Badiah [a,1]* , Andri Kurniawan [a,2]

[a] PGRI Adi Buana University Surabaya, Indonesia

[1]* Lutfi@unipasby.ac.id; [2] Andrikurniawan@unipasby.ac.id

* corresponding author

Article Information

Article History:

Received December 2024

Accepted January 2025

Published January 2025

Keywords:

Inclusive Education;

Articulate Storyline;

Interactive Multimedia.

How to Cite:

Badiah, L. I., *& Kurniawan, A.* (2025). Development of Interactive Multimedia Modules to Support Inclusive Education in the Learning Planning for Children with Special Needs Course. *Jurnal Dimensi Pendidikan dan Pembelajaran Universitas Muhammadiyah Ponorogo*, 13(1), pp 122-133.

Abstract

Inclusive education necessitates the availability of learning media accessible to all students, including those with visual impairments. This study focused on developing an interactive multimedia module using Articulate Storyline, designed to cater to the needs of visually impaired students and their peers in the Special Education Needs Planning course. The research employed the Research and Development (R&D) approach, utilizing the DDD-E model (Decide, Design, Develop, Evaluate). The process encompassed a needs analysis, the design of a module based on the principles of Universal Design for Learning (UDL), module development, and an evaluation of its feasibility and effectiveness. Validation by experts in learning planning, inclusive education, and multimedia design deemed the module highly effective and suitable for use without requiring revisions. Trials involving visually impaired and regular students demonstrated that the module enhanced both understanding and engagement in learning. This interactive multimedia module plays a pivotal role in advancing the implementation of inclusive education within higher education institutions. Further research can explore the application of the developed interactive multimedia module in different courses and broader educational settings to validate its adaptability and effectiveness. Comparative studies between traditional teaching methods and the integration of such modules could provide insights into their impact on learning outcomes, particularly for students with diverse needs.

INTRODUCTION

Inclusive education emphasizes the importance of meeting the learning needs of all students, including students with special needs. However, in its implementation, inclusive

education at the tertiary level faces many challenges, such as limited supporting facilities and human resources, minimal interaction between students, a less flexible curriculum, staff awareness and attitudes, and reliance on informal support (Collins et al., 2019; Sastradiharja et al., 2020; Shevlin et al., 2004; Vlachou & Papananou, 2018).

In higher education, the Learning Planning for Children with Special Needs course is a mandatory subject for students. At the Special Education Study Program of PGRI Adi Buana University Surabaya, this course is attended not only by typical students but also by visually impaired students who are enrolled in the program. However, challenges arise when students who are visually impaired face limited access to learning materials for this course. Visually impaired students often face barriers in accessing teaching materials due to the limitations of accessibility-friendly formats. Conventional learning resources (such as modules and *powerpoint* materials) cannot accommodate the learning needs, especially of visually impaired students. This certainly has an impact on the low motivation to learn and the level of participation of visually impaired students in academic activities. Therefore, the development of technology-based learning media, such as interactive modules, is a potential solution to bridge this gap. Learning media for blind students must be accessible through various formats (such as audio and braille text), and can be operated with the help of screen reader technology. In addition to blind students, normal students also need media that are interesting, interactive and able to generate motivation to learn.

Module is one of the media that can accommodate student learning needs, student characteristics and diverse lecture materials. Modules can be utilized as a learning resource to achieve learning objectives and expected competencies (Haliza & Trisnawati, 2023). In the field of education, the use of digital technology can accommodate various kinds of changes in the methods, approaches and atmosphere that occur within the scope of the teaching and learning process by implementing active and creative innovations (Widianto et al., 2021). Along with the development of technology itself, modules can be modified to be more interactive and interesting. Teachers can develop interactive learning modules, and of course, they can also accommodate the characteristics of the material, characteristics and diverse learning needs of students (Sidiq & Najuah, 2020). This module is designed to facilitate understanding of learning planning concepts through interactive, audio-based, and accessibility-friendly features. Interactive multimedia modules can help lecturers deliver material in multiple formats such as audio, video and text, which can be accessed by all types of learners. So this certainly provides flexibility to meet the diverse learning needs of students, including visually impaired students.

The development of interactive multimedia modules based on *articulate storyline* is also very useful for supporting independent learning during *online* learning and independent learning for students outside of lecture hours (Hadza et al., 2020; Nabilah et al., 2020; Sindu et al., 2021). This is also in line with one of the characteristics of the module, namely Self Instruction, where students can learn independently, regulate their own way and speed of learning and do not depend on other parties (Fahmi et al., 2020).

The development of interactive multimedia modules based on *articulate storyline* can be a solution that can be used to accommodate the learning needs of both blind and normal students. This is in line with the Universal Learning Design (ULD) approach, which places accessibility and flexibility at the core of learning design. In the context of inclusive education in higher education, ULD can help create an inclusive learning environment, where students with and without disabilities can learn together without discrimination.

Many challenges are faced during the implementation of self-directed learning in higher education. The dominant challenge is maintaining student motivation to keep their enthusiasm for learning and students' ability to learn independently. Lecturers need to innovate in developing learning media so that students can develop their potential while remaining motivated to find their

own knowledge (Ripai & Ropiah, 2023). Another advantage of incorporating multimedia elements into learning media during the learning process is that it stimulates students' interest and enthusiasm (Kurniawan & Risnani, 2021; Renggani & Priyanto, 2023).

The creation of interactive multimedia modules using Articulate Storyline is designed not only to meet the educational needs of both visually impaired and sighted students but also to promote the implementation of inclusive education policies in higher education. This study, therefore, seeks to develop an interactive multimedia module leveraging Articulate Storyline to enhance the quality of learning in the *Learning Planning for Children with Special Needs* course, ensure accessibility, and foster a more inclusive learning environment in higher education settings.

METHODS

The purpose of this study was to produce an interactive multimedia module for the ABK learning planning course. The research method used is the *Research & Development (R&D)* research method and uses the DDD-E model development procedure developed by (Ivers & Barron, 2002) It consists of 4 steps, namely *Decide, Design, Develop* and *Evaluate*.

Decice Stage, At this stage, the needs of both students and lecturers were identified through interviews with lecturers and students. As well as identifying the main competencies expected from the ABK Learning Planning course.

Design Stage, At this stage, *storyboarding* is carried out, an interactive media development plan based on *Universal for Learning (UDL)* using *articulate storyline*.

Develop Stage, At this stage, the development of interactive multimedia modules is carried out based on the design that has been designed in the previous stage. And internal testing is carried out to ensure the module can be used properly or not.

Evaluate Stage, At this stage, an evaluation of the feasibility and effectiveness of the module was carried out, involving expert lecturers with expertise in the field of learning planning, expert lecturers in inclusive education, and multimedia design experts). Students were also tested to get feedback on their experience of using the interactive multimedia module. The participants in this study consisted of 20 students enrolled in the Learning Planning for Children with Disabilities course within the Special Education Study Program. In the student trial, it consisted of an individual trial stage consisting of 2 blind students, and a small group trial consisting of 9 students using *purposive sampling technique*. The blind students involved in the individual trial stage were totally blind students who did not experience cognitive or other accompanying barriers.

Data collection techniques used interviews (to collect data on the needs of lecturers and students), observations (to evaluate the process of using the module by students), and questionnaires (to assess the feasibility of experts and students against the module). The data analysis techniques used were qualitative analysis (to analyze data from interviews and observations) and quantitative analysis (to analyze data from module feasibility and satisfaction questionnaires).

$$\text{PSA} = \frac{\text{Number of selected alternative answers per aspect}}{\text{Number of ideal alternative answers per aspect}} \text{ X } 100\% \quad \text{.....(1)}$$

Table 1. Articulate Storyline-based Interactive Multimedia Module Assessment Criteria

No.	Percentage Range	Criteria	Description
1	80%-100%	Very good	Ready to use in learning process (without revision)
2	66%-79%	Good	Ready to use in learning process (without revision)
3	56%-65%	Simply	Revised
4	40%-55%	Less	Revised

Source: Arikunto in (Cahyanto et al., 2020)

RESULTS AND DISCUSSION

The development of this interactive multimedia module was carried out using the DDD-E model developed by (Ivers & Barron, 2002). Each stage contributes significantly in producing an interactive multimedia module that can facilitate learning for both normal and visually impaired students in the Learning Planning for Children with Special Needs course.

Decide Stage

At this stage, a needs analysis was conducted on students and lecturers involved in the course. Data was obtained through interviews and questionnaires. At this stage, data obtained that both normal students and blind students need interactive learning media and can be accessed independently anytime and anywhere. It is also found that the learning styles of students are quite different, namely there are audio learning styles, visual learning styles, and audio-visual learning styles. Meanwhile, lecturers also really need media that can present material in a structured and interesting way.

So based on these findings, it is necessary to develop an interactive multimedia module based on articulate storyline that is able to process files in the form of powerpoint slides, images (images), video, audio, flash (swf) and animated characters (gif) into a single unit). (Permitasari et al., 2022). Furthermore, it can be synchronized with the learning management system (LMS). So that it can facilitate each student's learning style and support independent learning. Students can learn anywhere, anytime, can decide for themselves what to learn, determine how to learn and the topics to be studied (Oishi, 2020).

Design Stage

The creation of interactive multimedia modules using Articulate Storyline is intended to help students better comprehend the material. These modules are specifically designed to include explanatory content enhanced with illustrative images and videos, as well as evaluation questions to reinforce learning. In addition, students do not need to install it on their devices because this module is packaged in html form and synchronized on the LMS. So that students can easily access it from anywhere and anytime. Evaluation questions in this module can also be used by students to test their abilities and understanding independently. The articulate storyline-based interactive multimedia module is also designed using the principles of Universal Design for Learning, with the aim of facilitating the diverse learning needs of students. The module is designed to attract attention by using a combination of contrasting colors, interesting sounds, and intuitive icons.

Develop Stage

At this stage, the developer develops the content of the learning material into an articulate storyline-based interactive multimedia module. During the development process, the module is tested internally to ensure that all multimedia elements function properly and there are no technical *bugs*.

In the development of interactive multimedia modules based on articulate storyline, the structure of the framework begins with the cover, followed by the second part which is the introduction containing the semester learning plan and lecture contract, followed by the third part which is the material, and finally the evaluation. The following is the form of the module display.

Figure 1. Articulate Storyline-based Interactive Multimedia Module Display Design Results

This module is also equipped with student worksheets at the end of the material as evaluation material. In this evaluation section, students are asked to practice answering questions in each learning activity as a form of assessment. This aims to improve students' understanding of each learning activity.

Evaluate Stage

At this stage, the interactive multimedia module was evaluated through two stages, namely (1) an expert validation test involving expert lecturers with learning planning expertise, expert lecturers in inclusive education, and multimedia design experts providing input related to the completeness of the material, suitability of design, and accessibility, and (2) user trials involving normal students and visually impaired students, who attended the related courses. Feedback from students showed that the module was easy to operate, could help them understand the material, and was able to increase student learning engagement. The assessment criteria used to categorize the assessment of interactive multimedia modules based on articulate storyline are as follows:

Table 1. Results of the Assessment of Interactive Multimedia Modules Based on Articulate Storyline By Multimedia Design Expert

No.	Assessment Aspect	Score	Criteria	Description
1	User Interface	88%	Very good	
2	Layout/Display	89%	Very good	
3	Audio	88%	Very good	
4	Innovation/novelty	87%	Very good	
	Average	88%	Very good	Ready to use in learning process (without revision)

The assessment results from multimedia design experts are 88% (table 2) so that it can be concluded that it is ready for use in learning process (without revision). The assessment results from multimedia design experts are in the high enough category. The assessment is based on 4 main aspects, namely user interface, layout/appearance, sound or audio and novelty/innovation. Multimedia design experts assessed that interactive multimedia modules based on articulate storyline are quite easy to use for all users, both normal and blind students. Multimedia design experts also assessed that the element of pastel colors and clear and clear audio quality is also considered to add to the appearance to be attractive to students. As stated by (Asra, 2007; Kristanto, 2016), that learning media elements should be varied or diverse, because each media has advantages and disadvantages.

Table 2. Results of the Assessment of Interactive Multimedia Modules Based on Articulate Storyline By Learning Planning Subject Matter Expert

No.	Test Subject	Score	Criteria	Description
1	Suitability of Material with Curriculum	90%	Very good	
2	Suitability of Material with Learning Outcomes	92%	Very good	
3	Linguistics	91%	Very good	
	Average	91%	Very good	Ready to use in learning process (without revision)

Based on table 3 above, it can be seen that the results of the feasibility analysis from learning planning subject matter expert, obtained a score of 91% so that the product was considered ready to use in learning process (without revision). The assessment from the learning planning subject matter expert is also included in the high category. Interactive multimedia modules based on articulate storyline are considered to be in accordance with the Special

Education Study Program curriculum, learning outcomes, and learning objectives in the Learning Planning for Children with Special Needs course. The learning objectives for the Learning Planning for Children with Special Needs course are displayed at the beginning of the module, so that students can find out the learning objectives. This is important because, according to (Amanda & Albina, 2024; Sanjani, 2021), by knowing the learning objectives, students can know the goals to be achieved in each material and learning activity. This can also help them be more motivated and focused when following the learning process. The use of language in interactive multimedia modules based on articulate storyline is also considered easy to understand, simple and accompanied by examples in each material. So that it can help students understand the material better. As stated by (Kristanto, 2016), that the implementation of learning media in the learning process must be adjusted to the learning content/material and learning objectives to be achieved.

Table 3. Results of the Assessment of Interactive Multimedia Modules Based on Articulate Storyline By Inclusive Education Expert

No.	Test Subject	Score	Criteria	Description
1	Suitability to the learning needs of visually impaired students	95%	Very good	
2	Digital Accessibility	95%	Very good	
3	Compliance with Universal Learning Design approach	95%	Very good	
	Average	95%	Very good	Ready to use in learning process (without revision)

The assessment results from inclusive education experts are 95% and can be concluded to be ready for use in learning process (without revision) (table 4). Interactive multimedia modules based on articulate storyline are considered to be in accordance with the learning needs of visually impaired students, easy digital accessibility for the visually impaired, and in accordance with the Universal Learning Design (ULD) approach. Digital accessibility is the provision of electronic teaching materials in formats that are accessible to all students, including those with disabilities, to ensure full engagement in classroom learning (Kang et al., 2024). This principle refers to the ability of students with disabilities to obtain information fully, equally, and independently. The development of interactive multimedia modules based on articulate storyline is considered to be able to help blind students in learning. In addition, Interactive multimedia modules based on articulate storyline are designed using the Universal Learning Design approach. This approach focuses on the implementation of accessibility principles into teaching planning in higher education, by ensuring that the needs of students with disabilities can be accommodated from the beginning of learning (Kang et al., 2024; Silver et al., 1998). This approach not only benefits students with special needs but also benefits all students in the classroom.

The assessment results from the individual trial were 90% so that they were very well qualified and ready to be used in learning process (without revision), while the results from the small group trial scored 91% so it was concluded that the product was very good and ready to be used in learning process (without revision) (table 1.5). This high assessment is based on aspects of appearance, ease of operation/use, and clarity of material understanding. Both normal and visually impaired students admitted that it was easy to operate interactive multimedia modules based on articulate storyline, and easier to understand the material because the material was presented in an interesting and interactive way. They are also happy that with interactive modules that can be embedded in this learning management system, they do not need to install any applications. Based on the observation results, during the trial use of interactive multimedia

modules based on articulate storyline, students are considered to show more positive emotions, high curiosity, and high learning motivation as seen from the active participation of students during the lecture process. Likewise, visually impaired students showed significant differences, especially in the learning motivation indicator. Before using the interactive multimedia module based on articulate storyline, blind students looked passive listening to explanations from lecturers only, but with this module, blind students actively studied the module through their respective laptop devices. This is in line with research findings from (Dewi & Haryanto, 2019; Kusnadi & Azzahra, 2024; Larisa et al., 2024)(Dewi & Haryanto, 2019; Kusnadi & Azzahra, 2024; Larisa et al., 2024), that an indication of the effectiveness of learning efforts is the level of enthusiasm of students to learn, due to the influence of the social environment that applies interactive multimedia media so that it can encourage students to participate more actively and also try harder in learning activities. Revisions and suggestions from learning planning experts, inclusive education experts, multimedia design experts, blind students and normal students in the trial, then used as a reference in making revisions so that the interactive multimedia module based on articulate storyline produced can be better.

Tabel 4. Results of the Assessment of Interactive Multimedia Modules Based on Articulate Storyline By Student Limited Trial Assessment Results

No.	Test Subject	Assessment Aspect	Score	Description
1	Individual trial (Student with visual impairment)	Media display	89%	
		Ease of use	90%	
		Clarity of material	91%	
Average Score			90%	Ready to use in learning process (without revision)
2	Small group trial (normal student)	Media display	90%	
		Ease of use	89%	
		Clarity of material	91%	
Average Score			91%	Ready to use in learning process (without revision)

When teaching, a lecturer is faced with aspects of the diversity of characteristics and development of different students. In the process of delivering lecture material to students, the use of this media itself can be said to have an important role (Shoffa et al., 2021). But of course, in choosing learning media, teachers must pay attention to the characteristics of the material, the characteristics of students (including students with special needs), the nature of the course, as well as the support of facilities, learning facilities and the surrounding environment (Agustana, 2017) (Darmawan et al., 2019).

The implementation of Articulate Storyline Software makes it possible for lecturers to develop interactive multimedia modules (combining various image, video, audio, animation, and flash content), easy to operate by both novice and professional users, can be used offline and online, and can be embedded on web platforms and learnign management systems (LMS). (Firdawela & Reinita, 2021; Junpahira & Pahlevi, 2023; Rohmah & Bukhori, 2020; Suhailah et al., 2021). So that it is expected to accommodate the learning styles and learning needs of students with the help of interactive multimedia modules so that learning is more interesting and can also help students to evaluate interactively (Juhaeni et al., 2021). Teachers or lecturers who apply digital technology in the learning process can make learning itself more interactive and dynamic (Jh, 2018; Ramadhan et al., 2023; Sanusi & Bolaji, 2024).

Media or assistive technology plays an important role in improving the educational and psychosocial outcomes of visually impaired students in higher education. Learning media can increase the participation of visually impaired students in class discussions, enable them to engage

independently in academic work, and encourage opportunities for social interaction with peers. (Kamaghe et al., 2020; McNicholl et al., 2021). In line with the results of this study, interactive multimedia modules can help students do active learning and are also able to improve student learning outcomes. (Budiyono, 2020; Salsabila & Syaban, 2022). In addition, the implementation of interactive multimedia modules in learning can also strengthen the memory of the material presented in the module (Lestari, 2018).

The development of this interactive multimedia module is also based on Universal Learning Design. Diharapkan dengan pendekatan Universal Learning Design, the needs of students with disabilities become part of the initial instructional design, thus reducing their reliance on specialized support services. Universal Learning Design proposes that more flexible and inclusive teaching strategies can benefit all students, not just those with special needs. According to (Almeqdad et al., 2023; Coyne et al., 2012). The implementation of Universal Design for Learning in education demonstrates a significant improvement in the academic performance of students with special needs. Consequently, the development of this interactive multimedia module aligns with and promotes inclusive education for students with special needs in higher education, particularly in the Learning Planning for Children with Special Needs course. These results offer a solid basis for leveraging interactive multimedia modules to foster a more inclusive, accommodating, and responsive learning environment that addresses the diverse needs of students in the classroom.

CONCLUSION

The validation results from experts and user trials indicate that the interactive multimedia module developed using Articulate Storyline is highly effective, user-friendly, and efficient in enhancing understanding and learning motivation. These findings contribute to advancing inclusive education in higher education by offering learning media that are interactive, adaptive, and accessible. This research recommends the integration of the module into a Learning Management System (LMS) to expand its access and sustainability.

REFERENCES

Agustana, P. (2017). *PRINSIP-PRINSIP PEMBELAJARAN KOMPETENSI DI PERGURUAN TINGGI*. Prosiding Seminar : Revitalisasi Tata Kelola Perguruan Tinggi, Unipas Singaraja.

Almeqdad, Q. I., Alodat, A. M., Alquraan, M. F., Mohaidat, M. A., & Al-Makhzoomy, A. K. (2023). The effectiveness of universal design for learning: A systematic review of the literature and meta-analysis. *Cogent Education*, *10*(1), 2218191. https://doi.org/10.1080/2331186X.2023.2218191

Amanda, Y., & Albina, M. (2024). Analisis Tujuan Pembelajaran Menurut Ade Darman Regina. *Journal Of Islamic Studies*, *1*(2), 106–112.

Asra, S. (2007). Metode pembelajaran. *Bandung: CV. Wacana Prima*.

Budiyono, B. (2020). Inovasi Pemanfaatan Teknologi Sebagai Media Pembelajaran di Era Revolusi 4.0. *Jurnal Kependidikan: Jurnal Hasil Penelitian dan Kajian Kepustakaan di Bidang Pendidikan, Pengajaran dan Pembelajaran*, *6*(2), 300. https://doi.org/10.33394/jk.v6i2.2475

Cahyanto, D. D., Wiryokusumo, I., & Suhari. (2020). Pengembangan Media Mobile Interactive Berbasis Android untuk Mata Pelajaran Sistem Komputer Materi Pokok Sistem Bilangan

untuk Siswa Kelas X Program Studi Keahlian Teknik Komputer dan Informatika di Smk Wachid Hasyim 2 dan Smk Sejahtera Surabaya. *Jurnal Education And Development*, *8*(1), 328-328.

Collins, A., Azmat, F., & Rentschler, R. (2019). 'Bringing everyone on the same journey': Revisiting inclusion in higher education. *Studies in Higher Education*, *44*(8), 1475–1487. https://doi.org/10.1080/03075079.2018.1450852

Coyne, P., Pisha, B., Dalton, B., Zeph, L. A., & Smith, N. C. (2012). Literacy by Design: A Universal Design for Learning Approach for Students With Significant Intellectual Disabilities. *Remedial and Special Education*, *33*(3), 162–172. https://doi.org/10.1177/0741932510381651

Darmawan, L. A., Reffiane, F., & Baedowi, S. (2019). Pengembangan Media Puzzle Susun Kotak Pada Tema Ekosistem. *Jurnal Penelitian dan Pengembangan Pendidikan*, *3*(1), 14. https://doi.org/10.23887/jppp.v3i1.17095

Dewi, S. R., & Haryanto, H. (2019). Pengembangan multimedia interaktif penjumlahan pada bilangan bulat untuk siswa kelas IV sekolah dasar. *Premiere Educandum : Jurnal Pendidikan Dasar dan Pembelajaran*, *9*(1), 9. https://doi.org/10.25273/pe.v9i1.3059

Fahmi, R., Tusa'diah, H., Aswirna, P., & Sabri, A. (2020). Pengembangan Keterampilan Kolaborasi Melalui Penerapan Modul Interaktif Berbasis TTI. *Natural Science: Jurnal Penelitian Bidang IPA dan Pendidikan IPA*, *6*(2), 197–210.

Firdawela, I., & Reinita, R. (2021). Pengembangan Media Pembelajaran Articulate Storyline Menggunakan Model Think Pair Share di Kelas IV Sekolah Dasar. *Jurnal PGSD: Jurnal Ilmiah Pendidikan Guru Sekolah Dasar*, *14*(2), 99–112. https://doi.org/10.33369/pgsd.14.2.99-112

Hadza, C., Sesrita, A., & Suherman, I. (2020). Development Of Learning Media Based on Articulate Storyline. *Indonesian Journal of Applied Research (IJAR)*, *1*(2), 80–85. https://doi.org/10.30997/ijar.v1i2.54

Haliza, R. D., & Trisnawati, N. (2023). Development of E-Module for Automation of Public Relations and Protocol Management using Articulate Storyline 3. *Jurnal Pendidikan Administrasi Perkantoran (JPAP)*, *11*(1), 52–62. https://doi.org/10.26740/jpap.v11n1.p52-62

Ivers, K. S., & Barron, A. E. (2002). *Multimedia Projects in Education Designing, Producing, and Assessing* (A Division of Greenwood Publishing Group, Inc.). Teacher Ideas Press,.

Jh, T. S. (2018). Pengembangan E-Modul Berbasis Web Untuk Meningkatkan Pencapaian Kompetensi Pengetahuan Fisika Pada Materi Listrik Statis Dan Dinamis SMA. *WaPFi (Wahana Pendidikan Fisika)*, *3*(2), 51. https://doi.org/10.17509/wapfi.v3i2.13731

Juhaeni, J., Safaruddin, S., & Salsabila, Z. P. (2021). ARTICULATE STORYLINE SEBAGAI MEDIA PEMBELAJARAN INTERAKTIF UNTUK PESERTA DIDIK MADRASAH IBTIDAIYAH. *AULADUNA: Jurnal Pendidikan Dasar Islam*, *8*(2), 150. https://doi.org/10.24252/auladuna.v8i2a3.2021

Junpahira, S. V., & Pahlevi, T. (2023). Pengaruh Penggunaan Multimedia Interaktif Articulate Storyline 3 Berbasis Problem Based Learning Terhadap Hasil Belajar Siswa Kelas XI MP

Di SMK Nurul Islam Gresik. *Jurnal Dimensi Pendidikan dan Pembelajaran*, *11*(2), 149–171. https://doi.org/10.24269/dpp.v11i2.7220

Kamaghe, J. S., Luhanga, E. T., & Kisangiri, M. (2020). The Challenges of Adopting M-Learning Assistive Technologies for Visually Impaired Learners in Higher Learning Institution in Tanzania. *International Journal of Emerging Technologies in Learning (iJET)*, *15*(01), 140. https://doi.org/10.3991/ijet.v15i01.11453

Kang, J., Patton, K., & Gardiner-Walsh, S. (2024). Success for All: Maximizing Digital Accessibility in Special Education Teacher Preparation Courses through Universal Design for Learning. *Journal of Special Education Preparation*, *4*(3), 4–15. https://doi.org/10.33043/4a6kfo46

Kristanto, A. (2016). *Media pembelajaran* (1st ed.). Bintang Surabaya.

Kurniawan, M. R., & Risnani, L. Y. (2021). PENGEMBANGAN GAME EDUKASI DIGITAL DAN IMPLEMENTASI PADA PEMBELAJARAN BIOLOGI MATERI PLANTAE SISWA SMA KELAS X. *BIOEDUKASI (Jurnal Pendidikan Biologi)*, *12*(1), 1. https://doi.org/10.24127/bioedukasi.v12i1.3759

Kusnadi, E., & Azzahra, S. A. (2024). Penggunaan Media Pembelajaran Interaktif Berbasis Wordwall dalam Meningkatkan Motivasi Belajar Peserta Didik Pada Mata Pelajaran PPKn di MA Al Ikhlash Padakembang Tasikmalaya. *Jurnal Dimensi Pendidikan dan Pembelajaran*, *12*(2), 323–339. https://doi.org/10.24269/dpp.v12i2.9526

Larisa, M. A., Primasatya, N., & Hunaifi, A. A. (2024). Pengembangan Multimedia Interaktif Berbasis Game Edukasi Pada Materi Perkalian Untuk Siswa Kelas 3 Sekolah Dasar. *Jurnal Dimensi Pendidikan dan Pembelajaran*, *12 Special Issue*(1), 125–137.

McNicholl, A., Casey, H., Desmond, D., & Gallagher, P. (2021). The impact of assistive technology use for students with disabilities in higher education: A systematic review. *Disability and Rehabilitation: Assistive Technology*, *16*(2), 130–143. https://doi.org/10.1080/17483107.2019.1642395

Nabilah, C. H., Sesrita, A., & Suherman, I. (2020). DEVELOPMENT OF LEARNING MEDIA BASED ON ARTICULATE STORYLINE. *Indonesian Journal of Applied Research (IJAR)*, *1*(2), 80–85. https://doi.org/10.30997/ijar.v1i2.54

Oishi, I. R. V. (2020). Pentingnya Belajar mandiri Bagi Peserta Didik di Perguruan Tinggi. *IKRA-ITH HUMANIORA: Jurnal Sosial Dan Humaniora*, *4*(1).

Permitasari, M. A., Hartono, H., & Sugito, S. (2022). Pengembangan Modul Multimedia Interaktif Pendidikan Kewirausahaan Pada Industri Rumahan untuk SMALB Tunagrahita. *Jurnal Inovasi Teknologi Pendidikan*, *9*(1), 49–60. https://doi.org/10.21831/jitp.v9i1.44927

Ramadhan, R., Wahyudin, A. Y., Santosa, A., & Putri, C. A. (2023). Pendampingan Penyusunan Perangkat Pembelajaran Berbasis Mobile Bagi Guru Sman 5 Bandar Lampung. *Journal of Social Sciences and Technology for Community Service (JSSTCS)*, *4*(2), 201–207. https://doi.org/10.33365/jsstcs.v4i2.3104

Renggani, S. A., & Priyanto, W. (2023). Pengembangan Media Pembelajaran Interaktif Berbasis Android Pada Mata Pelajaran IPAS Kelas 4 SD. *Jurnal Dimensi Pendidikan dan Pembelajaran*, *11*(1), 233–241. https://doi.org/10.24269/dpp.v11i1.8115

Ripai, I., & Ropiah, O. (2023). Media Pembelajaran Digital Berbasis Prezi pada Matakuliah E Commerce terhadap Hasil Belajar Mahasiswa Pendidikan Teknologi Informasi dan Komunikasi STKIP Muhammadiyah Kuningan. *Jurnal Dimensi Pendidikan dan Pembelajaran*, *11*(2), 130–141. https://doi.org/10.24269/dpp.v11i2.6205

Rohmah, F. N., & Bukhori, I. (2020). Pengembangan Media Pembelajaran Interaktif Mata Pelajaran Korespondensi Berbasis Android Menggunakan Articulate Storyline 3. *Economic & Education Journal*, *2*(2), 169–182.

Salsabila, S. P., & Syaban, M. B. A. (2022). Pengembangan E-Modul Interaktif Materi Penampakan Alam Indonesia di Sekolah Dasar. *Jurnal Basicedu*, *6*(5), 7896–7905. https://doi.org/10.31004/basicedu.v6i5.3649

Sanjani, M. A. (2021). PENTINGNYA STRATEGI PEMBELAJARAN YANG TEPAT BAGI SISWA. *Jurnal Serunai Administrasi Pendidikan*, *10*(2), 32–37.

Sanusi, R. A., & Bolaji, H. O. (2024). Usability of ICT for Teaching Islamic Studies Concepts in Senior Secondary Schools. *Jurnal Media Dan Teknologi Pendidikan*, *4*(2), 166–172. https://doi.org/10.23887/jmt.v4i2.70926

Sastradiharja, E. J., Ms, F., & Sutarya, M. (2020). Pendidikan Inklusi Di Perguruan Tinggi. *Alim | Journal of Islamic Education*, *2*(1), 101–118. https://doi.org/10.51275/alim.v2i1.172

Shevlin, M., Kenny, M., & Mcneela, E. (2004). Participation in higher education for students with disabilities: An Irish perspective. *Disability & Society*, *19*(1), 15–30. https://doi.org/10.1080/0968759032000155604

Shoffa, S., Holisin, I., Palandi, J. F., Cacik, S., Indriyani, D., Supriyanto, E. E., Basith, B., & Giap, Y. C. (2021). *Perkembangan media pembelajaran di perguruan tinggi* (1st ed.). CV. Agrapana Media.

Sidiq, R. & Najuah. (2020). Pengembangan E-Modul Interaktif Berbasis Android pada Mata Kuliah Strategi Belajar Mengajar. *Jurnal Pendidikan Sejarah*, *9*(1), 1–14. https://doi.org/10.21009/JPS.091.01

Silver, P., Bourke, A., & Strehorn, K. C. (1998). Universal Instructional Design in Higher Education: An Approach for Inclusion. *Equity & Excellence in Education*, *31*(2), 47–51. https://doi.org/10.1080/1066568980310206

Sindu, I. G. P., Santyadiputra, G. S., & Permana, A. A. J. (2021). Designing learning object using articulate storyline 3 for supporting indonesia online learning system (spada). *Journal of Physics: Conference Series*, *1810*(1), 012058. https://doi.org/10.1088/1742-6596/1810/1/012058

Suhailah, F., Muttaqin, M., Suhada, I., Jamaluddin, D., & Paujiah, E. (2021). ARTICULATE STORYLINE: SEBUAH PENGEMBANGAN MEDIA PEMBELAJARAN INTERAKTIF PADA MATERI SEL. *Pedagonal : Jurnal Ilmiah Pendidikan*, *5*(1), 19–25. https://doi.org/10.33751/pedagonal.v5i1.3208

Vlachou, A., & Papananou, I. (2018). Experiences and Perspectives of Greek Higher Education Students with Disabilities. *Educational Research*, *60*(2), 206–221. https://doi.org/10.1080/00131881.2018.1453752

Widianto, E., Husna, A. A., Sasami, A. N., Rizkia, E. F., Dewi, F. K., & Cahyani, S. A. I. (2021). Pemanfaatan Media Pembelajaran Berbasis Teknologi Informasi. *Journal of Education and Teaching*, *2*(2), 213. https://doi.org/10.24014/jete.v2i2.11707