

## **Media Digital Unity 2D: A Study of Teachers' Perspectives on Its Impact on the Learning Motivation of Students with Hearing Impairments**

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### ***Abstract***

*This study explores the impact of using Unity 2D digital media on improving the learning motivation of students with hearing impairments. The use of this media is effective in increasing participation and enthusiasm in learning. Interactive features and attractive visualizations can create a pleasant learning atmosphere. The study employs a case study method, collecting data through interviews to explore teachers' perspectives on the use of Unity 2D digital media to enhance learning motivation. The research report indicates that teachers' perspectives on the use of Unity 2D digital media have a positive impact on empowering the learning motivation of students with hearing impairments.*

**Keywords:** Unity 2D, learning motivation, hearing impairment

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## **INTRODUCTION**

Without realizing it, we are currently living in the midst of ever-evolving digital technology. This means that all activities can be carried out in more sophisticated ways. This highly advanced and modern development affects all aspects of life, including education. This condition has an impact on paradigm shifts in the learning process for all subjects. Students need digital learning media to stimulate creative and critical thinking. Interactive computer games support the development of 21st-century competencies such as critical thinking, creativity, collaboration, and communication. With interesting and challenging features, digital games encourage students to actively learn, solve problems, and collaborate virtually. This medium also fosters early adaptation to technology and digital literacy in an enjoyable way (Anwar et al., 2021). Digital media plays a crucial role in enhancing learning outcomes by presenting content in an interactive, engaging, and easily accessible manner. Digital media also supports independent, repetitive, and visual learning, thereby strengthening conceptual understanding in all subjects and increasing student motivation and engagement in the learning process (Yuniarti et al., 2023).

In special schools, one of the challenges in teaching students with hearing impairments is their limited ability to understand verbal information, which requires visual media and special methods to make the material easier to understand and increase the motivation of students with hearing impairments to learn. Optimal learning motivation will have an impact on academic success and social communication development. Motivation encourages enthusiasm for learning, increases focus, and helps achieve goals consistently despite challenges. According to (Dhiya Rahma et al., 2024) learning success is greatly influenced by a person's level of motivation. If someone has strong motivation, they will be more enthusiastic, focused, and able to persevere in the face of difficulties.

Motivation makes the learning process more focused and continuous, so that the results obtained are maximized. Conversely, without motivation, enthusiasm for learning will easily fade and the process will become ineffective. Therefore, motivation plays an important role in achieving academic success. If someone has strong motivation to learn, the results achieved will be as expected. Motivation plays an important role as a driving force in achieving success. With strong motivation to learn, learning outcomes will also be maximized (Yogi Fernando et al., 2024). The existence of digital media as a learning medium provides great benefits, namely eliminating limitations of space, time, and distance, as well as providing positive stimuli and motivation. The importance of developing digital media has prompted teachers to innovate (Cipta et al., 2023).

One way to increase the learning motivation of students with hearing disabilities is to develop visual Unity 2D digital media. This media presents material in an interesting way through images, animations, and simulations so that it is easier to understand. This visual approach supports their learning style, thereby increasing their interest and involvement in the learning process. According to (Firmansyah, 2024), in the era of the 4.0 revolution, digital learning media has become an important instrument in the learning process, used by teachers as a tool to reconstruct students' knowledge.

Unity 2D digital media is capable of delivering lesson material in an attractive visual format that has an impact on the learning experience of students with hearing disabilities. Unity 2D can implement visualized content. Interactive feedback is believed to have the potential to increase engagement and understanding of the material and to plan effective, efficient, and valid digital media designs. The application of interactive feedback has been proven to increase student engagement because it provides immediate reactions to each activity. This allows students to immediately identify mistakes, better understand the material, and accelerate their learning progress. According to (Simorangkir et al., 2024), interactive feedback is very important in digital development to create an efficient and effective learning system. This will help to obtain accurate and measurable learning outcomes.

Unity 2D is one of the game and animation development platforms, offering a variety of flexible content that can be utilized to create effective learning media for students with hearing impairments (Prasetyo et al., 2021). With Unity 2D, learning media is developed by adapting to the conditions and characteristics of students with hearing impairments, such as the use of strong visuals, clear text, and high interactivity. The effective use of Unity 2D digital media can increase the learning motivation of students with hearing impairments, but further development is still needed to achieve perfection. This study aims to explore teachers' perspectives on the impact of using Unity 2D digital media on the learning motivation of students with hearing impairments.

## METHOD

This study uses a qualitative approach with a case study design to explore the phenomenon in depth and contextually. The research was conducted at SLB Negeri Pembina Pekanbaru. The number of participants selected was 7 (seven) teachers who teach special education for hearing impairments from different classes, namely (YEY), (CN), (JN), (HP), (AY), (NA), and (DNS). The data analysis techniques used were data reduction, data presentation, and drawing conclusions or verification.

## DISCUSSION

Qualitative analysis to identify teachers' perspectives on changes in student learning motivation using Unity 2D-based digital media through interviews with seven teachers, namely (YEY), (CN), (JN), (HP), (AY), (NA), and (DNS), has been conducted. The results of these interviews are presented below:

**Table 1.** Interview Results

| Questions        | Interview Results                                                                   | Reduction of Interview Results                             |
|------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------|
| Explain what you | (YEY) One of the learning media that uses digital technology to deliver educational | Unity 2D digital media is defined as 2-dimensional digital |

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| understand about Unity 2D digital media!                                              | <p>materials.</p> <p>(CN) Technology media in the form of educational games.</p> <p>(JN) Digital learning media connected to the internet.</p> <p>(HP) Digital media that makes various learning media in the form of 2 dimensions displayed with a projector in the classroom.</p> <p>(AY) Digital technology tools used to deliver learning activities.</p> <p>(NA) A learning medium that includes various forms, such as text, images, audio, video, animation, and multimedia interaction, designed to support learning more effectively and interestingly.(DNS) An interactive delivery method to deliver material in order to improve learners' understanding through currently familiar things such as games or animated videos.</p>                                                                                                                                                                                                                                                                                                                              | <p>technology in the form of educational games connected to internet access (YEY, CN, JN, HP). As a means or intermediary in delivering material during the learning process, it includes various forms, such as text, images, audio, video, animation, and multimedia interaction (AY, NA, DNS).</p>                                                                                                                                                                                                                                                                                                                 |
| What do you think are the benefits of Unity 2D digital media in the learning process? | <p>(YEY) Improve learning focus and concentration, increase learning motivation, bring out an honest competitive spirit in students.</p> <p>(CN) Increase learner interaction and participation, save time and money, and make learning more memorable.</p> <p>(JN) Of course it is very useful because it can support the teaching and learning process. The learning atmosphere is very fun, exciting, and competitive so that students' learning motivation increases, learning behavior is focused, and meaningful.</p> <p>(HP) It increases learning motivation and students are given the freedom to access learning materials in Unity 2D digital media anywhere and anytime.</p> <p>(AY) Very useful because it helps students understand difficult material in a more visual and interactive way.</p> <p>(NA) There are many benefits, one of which can help teachers make the learning process more effective and interactive which is fun.</p> <p>(DNS) It can make it easier for students to access information for learning purposes in the digital era.</p> | <p>Learners can significantly increase the level of focus and concentration of learning through the use of Unity 2D digital media. The use of this media creates memorable and meaningful learning, increases motivation, and creates a competitive spirit in learning (YEY, CN, JN). Accessibility and independent learning; learners are given the freedom to access learning materials in Unity 2D digital media anywhere and anytime (HP). Helps students understand difficult concepts in a more visual and interactive way and helps make it easier for students to learn in the digital era (AY, NA, DNS).</p> |
| What Unity 2D-based digital media do you often use in learning?                       | <p>(YEY) Animated video media.</p> <p>(CN) 2D type or simulator.</p> <p>(JN) Educational game media.</p> <p>(HP) More often using canva.</p> <p>(AY) Educational games and interactive learning media.</p> <p>(NA) Educational game media.</p> <p>(DNS) In the form of simulations, educational games, educational animations, quizzes and</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <p>Animated video media, simulations, educational games, educational animations, quizzes and tests or interactive educational games (YEY, CN, JN, AY, NA, DNS). Not using Unity 2D, but interactive learning media canva (HP).</p>                                                                                                                                                                                                                                                                                                                                                                                    |

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|                                                                                             | tests.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Do you think Unity 2D digital media can be used for learning in schools? Give your reasons! | <p>(YEY) Yes, this media is one of the digital media that helps students in absorbing the understanding of teaching materials.</p> <p>(CN) Yes, as a teacher, you can create simulations, games or other interactive media according to the relevant material content in various subjects.</p> <p>(JN) No, there are many kinds of digital media that are tailored to the needs of the teaching material. You don't have to focus on just one media.</p> <p>(HP) Yes, because all types of digital media based on unity 2D can be used in all subjects. It is just how the teacher adjusts to the material and the needs of the students.</p> <p>(AY) Yes, because this media is visual, auditory, and interactive.</p> <p>(NA) Yes, all learning materials can be presented in the form of interesting and meaningful presentation displays.</p> <p>(DNS) No, digital media can only be used if there is internet access and can only be used for junior or senior high school levels. For the SDLB level, it is not recommended to use digital media that requires students to hold gadgets while learning.</p> | <p>Most interviewees agreed that Unity 2D digital media can be used for all subjects because it can create simulations, games or other interactive media according to the relevant material content (YEY, CN, HP, AY, NA). However, there are opinions that indicate only certain subjects, because there are many kinds of learning media that can be utilized as learning resources. There are even subjects related to hands-on practice so it is impossible to be replaced with Unity 2D digital media (JN, DNS).</p>                                                                                                                   |
| Why did you choose to use Unity 2D digital media in learning?                               | <p>(YEY) Because the learning media is interesting and innovative</p> <p>(CN) Because it can make it easier for students to understand the sentences being studied</p> <p>(JN) Because the way hearing disabilities learn is visual, this will greatly help them understand learning and get a real picture.</p> <p>(HP) Because it is very interesting, fosters curiosity, and is suitable for media use for learning.</p> <p>(AY) Because it can make it easier for teachers to convey the material taught to learners with special needs.</p> <p>(NA) Because it can make the learning process more interesting, interactive, and effective.</p> <p>(DNS) Because it can make students focus and concentrate so that the teaching material can be absorbed well.</p>                                                                                                                                                                                                                                                                                                                                           | <p>Unity 2D digital media was chosen because it offers many advantages including; the content is accessible to learners with disabilities which is visual, interesting and innovative, easy to learn, the presentation is relevant and in accordance with learning objectives (YEY, CN, JN). Using up-to-date digital technology which is very attractive to learners because it is very interesting, fosters curiosity, attracts focus and attention, is able to maintain concentration for a long time, and increases motivation to complete the learning material so as to get the maximum final assessment score (HP, AY, NA, DNS).</p> |
| How do students respond when you use Unity 2D digital media in learning?                    | <p>(YEY) Students are very happy and enthusiastic.</p> <p>(CN) Very happy because the media uses a learning-by-play method.</p> <p>(JN) Happy and excited.</p> <p>(HP) Very positive response, enthusiastic, and more enthusiastic.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p>In learning, the use of Unity 2D digital media received a positive response. All learners showed enthusiasm because they felt they were learning while playing and they were challenged to complete the game in the shortest possible</p>                                                                                                                                                                                                                                                                                                                                                                                                |

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|                                                                                                            | (AY) Very happy and understand the material.<br>(NA) Very motivated in learning.<br>(DNS) Very interested in challenging educational games.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | time to maximize their score.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Do you see any changes in students' learning motivation when using Unity 2D digital media? Please explain! | (YEY) Yes, I always want to try and keep trying.<br>(CN) Yes, with the method of learning while playing, it will increase motivation to learn in a calm and pleasant atmosphere.<br>(JN) Yes, because this educational game is a long-awaited learning for students.<br>(HP) Learners show enthusiasm in the introduction of computer media, for a start<br>(AY) Yes, I see a change in motivation in learners with special needs. The spirit of learning increases, they are diligent in coming to school, they want to be the best in obtaining grades, and seem selfish in wanting to continue using the media.<br>(NA) There is an increase in students' interest in learning because it makes the learning process more interesting and interactive.<br>(DNS) It is easier for learners to understand academic concepts in a more visual and interactive way. | There is a positive impact on increasing students' learning motivation when learning by using Unity 2D digital media significantly. Learning with this interactive game becomes a favorite learning, the subject matter is easy to understand, and increases the competitiveness of students. (YEY, CN, JN). Learners showed enthusiasm in the introduction of computer media as a start (HP). Changes in motivation in learners with special needs are characterized by high interest in learning, increased enthusiasm for learning, diligent in coming to school, wanting to be the best in obtaining grades, and seem selfish in wanting to continue using the media, easily understanding academic concepts (AY, NA, DNS). |
| Explain what obstacles you encountered when using Unity 2D digital media!                                  | (YEY) Not all students are able to use it at home.<br>(CN) So far, teachers' digital literacy is still low, so they are unable to create more interesting media designs.<br>(JN) Time management for making digital media, must set aside more time on the sidelines of busy class administration.<br>(HP) Wifi and electronic media are still limited.<br>(AY) Difficulty integrating animation features into the application.<br>(NA) Not all students have android devices to practice at school/home.<br>(DNS) Organizing effective time and providing equal opportunities for students to practice its use.                                                                                                                                                                                                                                                   | When using Unity 2D-based digital media, the main obstacles were found to be that not all students were able to use it at home due to the unavailability of android, unstable internet access, time management for making media (YEY, JN, HP, NA). Difficulty designing and making media due to lack of digital literacy (CN, AY). Difficulties in managing effective time and providing equal opportunities for learners to practice its use (DNS).                                                                                                                                                                                                                                                                            |
| How do you overcome these obstacles?                                                                       | (YEY) Learners use it in turns and are supervised.<br>(CN) Trying to find out through google or videos that discuss the media.<br>(JN) Worked on when students have finished teaching and learning activities and completed before school hours for teachers and employees.<br>(HP) Trying to find media that support the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Ways to deal with problems that arise when using Unity 2D digital media include taking turns and being supervised, increasing digital literacy activities, improving technological infrastructure (stable internet connection), and designing and making media after the learning                                                                                                                                                                                                                                                                                                                                                                                                                                               |

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|                                                                                            | <p>implementation of learning activities.</p> <p>(AY) Trying to understand how to use animation features or simple educational games.</p> <p>(NA) Utilizing learning time at school to instill the concept of meaningful learning in students. Teachers do not need to give homework to students anymore</p> <p>(DNS) Time management that can really maximize learners' understanding in using the media.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p>process is complete (YEY, CN, JN, HP, AY). Not giving homework to students and maximizing the understanding of media that is relevant to the material and learning objectives (NA, DNS).</p>                                                                                                                                                                                                                                                                                                                                                                                            |
| <p>What do you think is needed to support the effective use of Unity 2D digital media?</p> | <p>(YEY) Need synergized school cooperation with parents</p> <p>(CN) Teachers must really understand the use of media in order to increase the enthusiasm of students learning to read.</p> <p>(JN) The need for training in making learning media for teachers, because not all teachers are willing and able to find out about the latest innovative learning on their own.</p> <p>(HP) The availability of updated electronic devices and tutors who have qualified knowledge and understand the constraints of students.</p> <p>(AY) Availability of wifi, computer media, laptops, and other media.</p> <p>(NA) Availability of technical infrastructure, human resources, content and materials, management and monitoring.</p> <p>(DNS) Awareness of teachers, schools, and parents to be technologically literate to support students' educational development.</p> | <p>In order for the learning process to run effectively, the use of Unity 2D digital media requires several important aspects. Synergized school cooperation with parents, teachers who are literate in digital literacy, teachers conducting activities to upgrade academic and professional competencies (YEY, CN, JN, AY, NA). Updated and adequate technological infrastructure and electronic devices including stable internet access and the awareness of teachers, schools and parents to be technologically literate to support students' educational development. (HP, DNS).</p> |

## RESULT AND DISCUSSION

In this study, interviews with seven teachers at SLB Negeri Pembina Pekanbaru regarding teachers' perspectives on the use of Unity 2D digital media and its impact on increasing the learning motivation of students with hearing disabilities yielded several views, which can be summarized as follows:

### 1. Definition of Unity 2D Digital Media

Unity 2D digital media is defined as a platform or software for developing 2D games using the Unity 2D engine. Unity is popular and effective software for creating games and interactive applications. Unity 2D is seen as a platform that emphasizes attractive, clear, and easy-to-understand visual displays, designed to meet the needs of educational materials. Given the growing presence of Unity 2D digital media today, teachers are required to possess digital literacy competencies. The digital literacy skills possessed by teachers serve as an initial approach to creating a learning environment that stimulates students to be more creative, active, and effective, thereby enhancing their learning motivation. According to (Aisy et al., 2024), Unity 2D interactive educational media is designed to stimulate visual sensitivity and sharpness of thinking, thereby increasing concentration and learning motivation. Teachers who are able to design good learning experiences reap several positive benefits, namely that students gain new knowledge and experiences, increased motivation, and improved learning outcomes.

## **2. Benefits of Using Unity 2D Digital Media**

The results of interviews with seven teachers who were used as sources led to an agreement that Unity 2D digital media has several benefits, including: (1) Unity 2D digital media is quite easy to use because it has a simple and intuitive interface. Unity 2D has a well-organized window and panel layout and settings so that users can quickly find the tools and functions they need. Users can easily drag and drop assets and modify object properties. According to (Ari Putri & Taurusta, 2023) users can quickly create prototypes and test game ideas without writing complex code. (2) Unity 2D digital media users can easily share insights and important information needed in game development thanks to its extensive documentation and large community. Unity has comprehensive, easy-to-understand documentation and a large online community that provides tutorials, examples, and support, making it easy for developers to learn and overcome any problems they may encounter.

## **3. Types of Unity 2D Digital Media**

The interview results explain that there are several types of Unity 2D digital media that they use in learning, including: (1) Unity 2D designs educational games to teach certain concepts through fun games. (2) Unity 2D is an interactive simulator learning media that allows students to experiment and explore concepts that are difficult to understand. (3) Unity 2D creates interactive learning applications that focus on delivering information and exercises containing text, images, animations, and quizzes. (4) Unity 2D can be used to present digital display models in line with current developments. (5) Unity 2D enables the creation of interactive stories and choices that can influence students' thinking patterns in a more measurable, dynamic, and critical way. According to (Cinde & Pinandita, 2023), teachers who use Unity 2D digital media in learning can create a more dynamic and engaging learning environment, increase student engagement, and maximize learning outcomes.

## **4. The Application of Unity 2D Digital Media in Learning**

The teachers who served as resource persons explained that Unity 2D digital media can be applied in learning through several steps, including: (1) Planning and design through activities such as determining learning objectives, designing media concepts, and developing platform assets and features. Teachers identify the material to be taught by establishing clear and measurable learning outcomes, selecting appropriate media, and determining the implementation of asset development. (2) Developing Unity 2D digital media through activities such as creating projects, designing activity levels aligned with the taught material, programming interactions between objects via simulations aligned with learning objectives, and conducting testing and evaluation. All these steps need to be thoroughly tested so that teachers can ensure that all functions work properly. The requested feedback can come from students and peers with the aim of improving the learning process (Anwar et al., 2021).

## **5. Students' Responses to the Use of Unity 2D Digital Media**

The results of interviews with teachers as informants indicate that Unity 2D digital media has great potential to improve the quality of learning and strengthen the mental resilience of students in the future with the development of digital technology. This condition is indicated by the following responses from students: (1) Positive and motivated responses in learning, as shown by their focus in listening to the presentation of material. (2) Adapting to the digital era. Students are increasingly accustomed to using digital media to prepare them to compete in a society dominated by digitalization. (3) Developing creative problem-solving skills, evidenced by the ability to design and create digital projects. According to (Himawan & Suryantara, 2023), the use of Unity 2D digital media can increase learning motivation, as evidenced by the development of critical thinking, the ability to create innovative projects, the ability to solve problems in facing life's challenges, and becoming an independent individual with a strong mental attitude toward work.

## **6. The Influence of Unity 2D Digital Media on Student Motivation**

The progress of students' motivation in learning when using Unity 2D digital media can be seen significantly. At first, students appeared passive. However, the use of Unity 2D digital media makes learning more interesting compared to conventional approaches. If the learning process is delivered using the lecture method, it results in a lack of student involvement, making the teaching and learning process appear very boring. According to (Jumiati et al., 2022) presenting learning materials solely through visual or audio means does not allow students to absorb the information effectively. On the other hand, learning activities that actively involve students using multimedia-based media make the learning process relevant, memorable, and meaningful.

## **7. Barriers to Using Unity 2D Digital Media**

Unity 2D digital media does offer many benefits in learning. However, there are still several obstacles that arise in its use, including: (1) Limited internet access because some features in Unity 2D require a stable internet connection, making it difficult for students living in areas with minimal internet access to use it. (2) Lack of resources and support related to the Unity 2D application. Teachers may require specialized training to effectively use Unity 2D in their teaching. (3) Digital skill gaps; each student has varying levels of proficiency in using Unity 2D effectively. This can lead to disparities in learning outcomes. (4) Potential distractions; students may be more focused on or interested in the game than the learning content, requiring proper supervision and guidance from teachers. (5) Unity 2D is a relatively complex software that requires time to master its features and functions. According to (Cipta et al., 2023), teachers with minimal programming experience will find it difficult to develop it.

## **8. Teachers' Needs in Implementing Unity 2D Digital Media**

Teachers' efforts to create a deep learning environment when implementing Unity 2D digital media require various needs, including: (1) Technical knowledge and skills in the form of mastery of Unity 2D software and digital literacy. A teacher needs to understand the basics of using Unity 2D, the skills to design and develop interactive learning content, a solid understanding of ICT integrated into learning, and the ability to solve technical issues that may arise when using Unity 2D media (Komang Sri Purniasih & I Gusti Ayu Tri Agustiana, 2024). (2) Pedagogical skills in designing learning, classroom management, and learning evaluation. A teacher must have the skills to design interactive learning activities, manage the classroom effectively to maintain student engagement, facilitate question-and-answer sessions, and evaluate learning, design appropriate assessments, and provide effective and constructive feedback. (3) Resources and support through professional training and development activities, access to hardware and software, technical support, and learning resources. Schools need to provide multimedia equipment and technical support from IT experts or computer technicians, teachers need adequate training on using Unity 2D in a learning context and access to quality learning resources so that they can become competent in developing interesting, effective, and interactive educational content.

## **DECLARATION OF COMPETING INTEREST**

No known financial conflicts of interest or personal relationships that could have influenced the work reported in this manuscript.

## **DECLARATION OF ETHICS**

The research and writing of this manuscript adhere to ethical standards of research and publication, in accordance with scientific principles, and are free from plagiarism.

## **DECLARATION OF ASSISTIVE TECHNOLOGIES IN THE WRITING PROCESS**

Generative Artificial Intelligence and other assistive technologies were not excessively utilized in the research and writing processes of this manuscript.

## CONCLUSION

As a digital medium, Unity 2D has advantages in designing interactive technology-based learning. Teachers can deliver material in a more interesting and enjoyable visual and audio format, thereby increasing student enthusiasm. This medium is also effective for illustrating difficult concepts in a more realistic way through educational games. In today's digital age, Unity 2D is a relevant, efficient learning tool that supports maximum learning achievement.

Based on the research results, according to the perspectives of seven teachers who were interviewed, the use of Unity 2D digital media can increase the learning motivation of students with hearing disabilities. However, a small number of teachers at SLB Negeri Pembina Pekanbaru still use conventional learning approaches due to existing limitations. Some of these limitations include unstable internet connections and low digital literacy among teachers in designing learning activities. Teachers are making efforts to overcome these obstacles by evaluating the learning process and participating in various scientific activities held online or offline to improve their digital literacy competencies.

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