Didaktika: Jurnal Kependidikan
P-issn 1978-0214; E-ISSN 2657-196X

Development of Multisensory Media in Islamic Religious Education at SLBN 1 Parepare

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Keywords
Multisensory Media; Islamic Religious Education; Special School (SLB)

Abstract

This study discusses the development of multisensory-based learning media in Islamic Religious Education (PAI) at SLBN 1 Parepare. This media is designed to help students with special needs understand Taharah material, including the requirements for wudhu, the pillars of wudhu, and the invalidators of wudhu, by engaging more than one sense through interactive visual and audio displays. The purpose of this study was to analyse the process of developing multisensory media and to evaluate the validity, practicality, and effectiveness of the media in improving student learning outcomes. The method used was Research and Development (R&D) with the ADDIE development model, which consists of five stages: Analyse, Design, Development, Implementation, and Evaluation. The research subjects included 10 students and one Islamic Education teacher at SLBN 1 Parepare. Data collection techniques were carried out through observation, interviews, tests, and documentation, and analysed using quantitative analysis. The results showed that the developed multisensory media met the criteria of validity, practicality, and effectiveness, with a significant increase in student learning outcomes and positive responses from students and teachers, so that this media could be an innovative alternative in PAI learning at SLB

Kata kunci:
Media Multisensori; Pembelajaran PAI; SLB

Article history:
Received: 18-12-2025
Revised 25-12-2025
Accepted 30-12-2025

Abstrak

Penelitian ini membahas pengembangan media pembelajaran berbasis multisensori dalam mata pelajaran Pendidikan Agama Islam (PAI) di SLBN 1 Parepare. Media ini dirancang untuk membantu peserta didik berkebutuhan khusus dalam memahami materi Taharah, meliputi syarat wudhu, rukun wudhu, dan pembatal wudhu, dengan melibatkan lebih dari satu indera melalui tampilan visual dan audio yang interaktif. Tujuan penelitian ini adalah untuk menganalisis proses pengembangan media multisensori serta mengevaluasi kevalidan, kepraktisan, dan keefektifan media dalam meningkatkan hasil belajar siswa. Metode yang digunakan adalah Research and Development (R&D) dengan model pengembangan ADDIE, yang terdiri dari lima tahap: Analyze, Design, Development, Implementation, dan Evaluation. Subjek penelitian meliputi 10 siswa dan satu guru PAI di SLBN 1 Parepare. Teknik pengumpulan data dilakukan melalui observasi, wawancara, tes, dan dokumentasi, serta dianalisis menggunakan analisis kuantitatif. Hasil penelitian menunjukkan bahwa media multisensori yang dikembangkan memenuhi kriteria valid, praktis, dan efektif, dengan peningkatan hasil belajar siswa yang signifikan dan respons positif dari peserta didik serta guru, sehingga media ini dapat menjadi alternatif inovatif dalam pembelajaran PAI di SLB.

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INTRODUCTION

Learning media is anything that can be used to convey messages or information in the teaching and learning process, thereby stimulating the attention, interest, understanding, and motivation of students in receiving lesson material (Mudjiono,2023). Media serves as a tool to assist teachers in delivering material and also as a tool to assist students in understanding lessons more easily and meaningfully. Learning media are tools, methods, or techniques used to make communication and interaction between teachers and students in the learning process more effective. Media can be in the form of images, videos, teaching aids, sounds, or a combination of various elements that are capable of conveying information visually, auditorily, or kinesthetically (Smaldino, 2021).

One important learning medium to consider is multisensory-based media. Multisensory media is learning media designed to stimulate and engage more than one of the student's senses simultaneously in the learning process (Surtikayati & Ritonga, 2023). Media does not rely solely on one type of stimulus, such as visual (sight) or auditory (hearing), but combines various types of stimuli, such as visual, auditory, kinesthetic (movement/touch), and even tactile (touch), to enhance the effectiveness of learning (Suharni & Pamungkas, 2025).

The phenomenon occurring at SLBN 1 Parepare is that the learning conditions at SLBN 1 Parepare prioritise learning methods that focus on the abilities of students with special needs with various types of disabilities, such as mental retardation, blindness, deafness, physical disabilities and autism. In the learning process, teachers at SLBN 1 Parepare have attempted to use a variety of teaching styles, including simulation and demonstration methods, as well as utilising video and audio-based learning media, which are still very limited, and visually impaired students are still restricted. The efforts made by teachers still face significant obstacles, particularly related to the limitations of inadequate school facilities and a lack of human resources in teaching children with special needs.

The importance of Islamic Religious Education (PAI) for children with special needs lies in its role in shaping the character, moral values, and spirituality of students as a whole, regardless of physical or intellectual limitations (Rizal et al., 2025). At SLBN 1 Parepare, the phenomenon of PAI learning is very important considering that the students served have various disabilities such as mental retardation, blindness, deafness, physical disabilities, and autism. In this context, PAI is not only a formal subject but also a means to instil values of faith, patience, responsibility, and respect for oneself and others.

Students at SLBN 1 Parepare have very diverse characteristics, which directly influence the learning approach, especially in Islamic Religious Education (PAI) subjects. They consist of children with various types of special needs, such as mild to moderate intellectual disabilities, autism, and physical motor impairments. Each student demonstrates different learning patterns, comprehension levels, and adaptive abilities. Learning at special needs schools (SLB) faces various complex challenges, as it involves the diverse needs of students with physical, intellectual, social, and emotional impairments. One class at an SLB may consist of students with different types of disabilities, such as intellectual disabilities, visual impairments, hearing impairments, autism, or physical motor impairments. These differences require teachers to design highly individualised and flexible learning so that they can meet all students' needs.

Learning at SLB 1 Parepare cannot be equated with the learning model in regular schools in terms of methods, strategies, and media. This explanation is in line with Munadi's view that teachers need creativity and innovation to present learning materials that are easy to understand, interesting, and able to stimulate the overall development of students (Munadi, 2022). One very important approach is the use of multisensory learning media that can accommodate various types of learning styles and sensory limitations of students.

Based on initial observations at SLBN 1 Parepare, it was found that the Islamic Religious Education (PAI) learning process still minimises the use of optimal media. The existing learning media, such as printed images, blackboards, and verbal explanations, are conventional and lack interactivity. This is an obstacle, especially since students at SLBN 1 Parepare have diverse special needs, such as mild to moderate intellectual disabilities, autism, and physical motor impairments. Each student has different learning styles and paces, so general media cannot meet their needs equally.

Limitations in media also add to the challenges in the learning process. Some of the media used do not have multisensory functions to stimulate more than one sense. For example, visual media are not effective for students with intellectual disabilities or low attention spans, while audio media are not accessible to deaf students. This causes some students to appear unfocused, passive, and unenthusiastic in their learning. In addition, teachers face difficulties in delivering PAI material because they have to adapt to the conditions of each student.

It is important to note that despite efforts by schools to improve the quality of learning, there is still a significant gap in the use of multisensory media and teaching strategies. This study aims to fill this gap, particularly by presenting more inclusive and adaptive solutions.

The main problems in learning at SLBN 1 Parepare lie in the use of conventional media, the limitations of media in accommodating all student needs, and monotonous teaching methods. In this case, the development of multisensory-based learning media that can accommodate various learning styles and special needs of students is urgently needed. One relevant solution is the development of multisensory-based interactive video media.

There are several gaps that need to be addressed in this study. First, there is a lack of effective multisensory learning media to support PAI learning for students with special needs in SLB. The existing media are conventional and unable to accommodate the diverse sensory needs of students. Second, although multisensory media has great potential in increasing engagement and understanding, there is still little research that implements and evaluates its effectiveness in SLB, especially in PAI learning. Third, there is a mismatch between the diversity of students' learning styles and the available media. The various types of barriers faced by students require more flexible and adaptive media. Fourth, the limitations of the media also have an impact on the lack of variety in teaching methods used by teachers, which still tend to be monotonous.

The development of multisensory-based learning media is the main solution to overcome this problem. Multisensory media can meet the needs of various types of senses, such as visual, auditory, kinesthetic, and tactile, which can create a more interesting, enjoyable, and non-monotonous learning atmosphere (Sudjana & Rivai, 2021). Especially in Islamic Religious Education (IRE) material on thaharah (purification), which covers cognitive, affective, and

psychomotor aspects, multisensory media can provide a more comprehensive learning experience for students at SLBN 1 Parepare.

Based on learning theory, conveying information through visual and verbal channels simultaneously can increase the effectiveness of learning (Mayer, 2019). Multisensory-based interactive video media allows students to be actively involved in learning, such as in wudu simulations, which are highly relevant to thaharah material in PAI. Therefore, this study aims to develop multisensory-based learning media that can accommodate the sensory needs of students with various disabilities, which ultimately aims to improve the quality of PAI learning at SLBN 1 Parepare.

RESEARCH METHOD

The research method used in this study was the Research and Development (R&D) approach with the ADDIE model (Analyse, Design, Development, Implementation, and Evaluation). The ADDIE model was chosen because of its systematic process and the possibility of continuously improving product development through evaluation at each stage. In the analysis stage, the researcher identified the needs of students with special needs at SLBN 1 Parepare, especially regarding difficulties in understanding taharah material, which includes the requirements, pillars, and invalidators of wudhu. The researcher also analysed the characteristics of students with diverse sensory needs and learning styles. The design stage then led to the preparation of a plan for video-based multisensory learning media, including the development of storyboards, visuals, narration, text, and animation, tailored to the students' needs. In the development stage, interactive video media was developed in accordance with the design that had been prepared, and then tested on a limited scale to identify the strengths and weaknesses of the media developed. After the media was developed, the implementation stage was carried out by applying it in Islamic Religious Education (PAI) classes, where this media involved multisensory elements—visual, auditory, kinesthetic, and tactile. Finally, the evaluation stage was carried out formatively and summatively to assess the effectiveness of the learning media. This evaluation included an assessment of the media's success in improving students' understanding and their involvement in learning.

The data collection methods in this study included observation, interviews, tests (pre-test and post-test), and documentation. The data obtained from observation was used to observe the learning process directly, focusing on the interaction between students and teachers and the level of student engagement when using multisensory learning media. Interviews were conducted with Islamic Education teachers to explore their views on the effectiveness of the media, as well as the obstacles faced in teaching students with special needs ( ). In addition, interviews were also used to gather input on student characteristics that need to be considered in the development of learning media. Pre-tests and post-tests were given to students to measure their level of understanding of the material before and after using the learning media. These tests were related to taharah material, which included the requirements for wudhu, the pillars of wudhu, and the nullifiers of wudhu. Documentation was carried out to collect physical evidence and supporting data, such as photos of learning activities, video recordings during media implementation, and assessment sheets from teachers. This documentation served to

complement the data from observations and interviews, as well as to enrich the analysis of the research results.

The research instruments used consisted of questionnaires distributed to subject matter experts, media experts, and teachers. The questionnaire for subject matter experts was designed to assess the suitability of the content and appropriateness of Islamic Religious Education material, particularly regarding taharah, as presented in multisensory video media. The aspects assessed in this questionnaire included the accuracy of the material, its suitability to the curriculum, the depth of the material, and the comprehensibility of the language used. The assessment by subject matter experts was an important basis for improving and revising the material before it was implemented in the classroom. The questionnaire for media experts was used to assess the quality of the media developed from a technical and visual perspective. The aspects evaluated include graphic design, use of animation or illustrations, audio and visual quality, and ease of media navigation. The questionnaire for teachers aims to obtain input regarding the ease of use of media in learning, its effectiveness in improving student understanding, and student engagement in learning using the media. Input from teachers is very important because they are the direct users of media in the learning process in the classroom.

In this study, data analysis was conducted descriptively for qualitative data obtained from interviews and observations, and quantitatively for data obtained through pre-tests and post-tests. Qualitative data were analysed to identify patterns and themes related to the effectiveness of media in improving student understanding. Quantitative data were analysed using percentage calculations, validity qualifications, and effectiveness tests through N-Gain analysis. N-Gain analysis was used to measure the increase in student understanding between the pre-test and post-test. In this case, learning media is considered effective if the N-Gain score is in the range of ≥0.3, which indicates that there is a significant increase in student understanding after using the media.

RESEARCH RESULTS AND DISCUSSION

Results

This study aims to describe the process of developing multisensory media used in Islamic Religious Education (IRE) learning at SLBN 1 Parepare. The development process of this media followed the ADDIE model stages, which include initial design, planning, development, and evaluation. The description of the developed media refers to image- and visual-based multisensory media that are attractive, with the aim of improving the understanding of students with special needs.

1. Analyse

a. Initial-Final Analysis

The initial-final analysis aims to determine the condition of PAI learning before the media development was carried out. Based on observations and interviews with PAI teachers, it was found that learning still used conventional methods such as lectures and question and answer sessions. The media used was limited to textbooks and static images, which were unable to attract the attention of students with special needs. This resulted in low levels of student engagement in learning, as well as the inability of conventional media to meet the sensory needs

of students with various disabilities. As a result, the level of student understanding, especially in the material on the procedures for wudhu, remained low. From this, it was identified that more interactive, concrete learning media that can engage various senses are needed to help students understand the material more effectively. In this context, the use of multisensory media is expected to provide a more holistic learning experience by stimulating more than one sense, which can help overcome these obstacles.

b. Student Analysis

This analysis aims to understand the characteristics of students as a basis for media design. The research subjects consisted of 10 students with different characteristics, including intellectual abilities, physical conditions, and learning styles. Some students had mild hearing and intellectual impairments, requiring learning that integrated visual and audio elements. Based on multisensory learning theory, students with hearing impairments will benefit from more dominant visual and kinesthetic stimulation, while students with intellectual limitations require an approach that facilitates their understanding through various sensory channels. Based on observations, students show high interest when learning is accompanied by moving images, sounds, and hands-on activities. Therefore, multisensory media is considered appropriate to meet these needs. This is in line with previous studies showing that a multisensory approach can increase student engagement and motivation, as well as strengthen their understanding of the material being taught.

c. Material Analysis

The material analysis was conducted by examining the Islamic Education curriculum implemented in special needs schools, particularly on the theme of worship. The selected materials were the requirements for wudhu, the pillars of wudhu, and the invalidators of wudhu. These materials were selected based on the finding that many students had difficulty understanding and memorising the steps of wudhu correctly. This material was then developed into a video-based multisensory medium that presents images, sounds, text, and movements simultaneously, so that students with special needs can understand more easily. The following are the learning objectives achieved:

Table 1. Learning Objectives

No	Learning Material	Learning Objectives	Competency Achievement Indicators
1	Requirements for Wudhu	Students are able to correctly state the valid requirements for wudhu.	Students can name at least five of the six requirements for valid ablution. Students can give examples of conditions that render wudhu invalid.
2	The Pillars of Wudhu / Its Procedure	Students are able to list and practise the pillars of wudhu in the correct order.	Students can correctly list the six pillars of wudhu. Students can practise the steps of wudhu according to the instructional video.

3	Things That Invalidate Wudhu	Students are able to identify things that invalidate wudhu in daily life.	Students can list four things that invalidate wudhu. Students can provide real-life examples of situations that invalidate wudhu.

Based on the learning objectives table above, it can be concluded that the development of multisensory media in Islamic Religious Education at SLBN 1 Parepare is focused on helping students with special needs understand the material on wudhu comprehensively, in terms of knowledge, skills, and spiritual attitude. By presenting visual, audio, text, and movement elements, this media aims not only to improve students' ability to mention and practise the requirements, pillars, and invalidators of wudhu, but also to foster awareness of the importance of maintaining personal purity as part of worship to Allah SWT. This research contributes to the development of inclusive learning media that not only focuses on cognitive mastery of the material but also on the formation of attitudes and practical skills that can be applied in students' daily lives.

2. Design

The design stage is the second step in developing visual and audio-based multisensory media. At this stage, researchers design concepts, displays, content, and learning strategies that are appropriate for the needs of students and the material that has been determined in advance. This design involves creating media flowcharts, storyboards, and compiling learning content that combines interactive elements. The following is a flowchart of this development research.

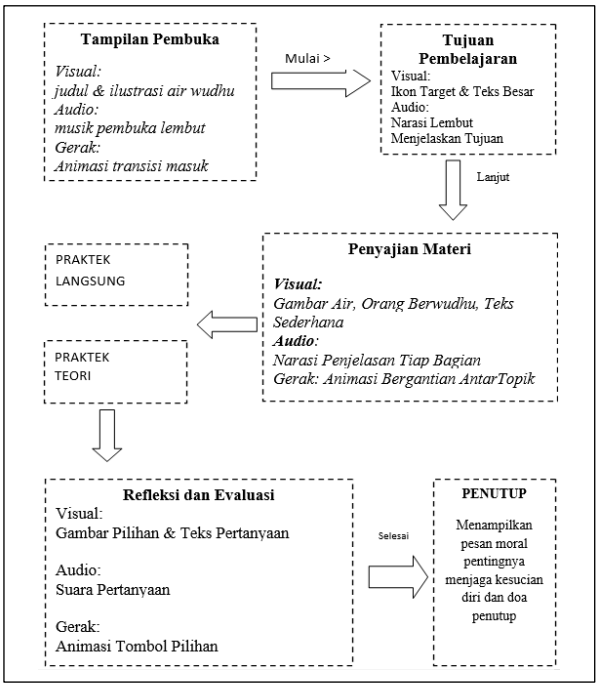

Figure 1. *Flowchart*

3. Development

The following is an overview of the learning media developed:

Figure 2. Developed Media

Expert validation was conducted to ensure the suitability of the media before it was used in learning. At this stage, the media was validated by Marwan SPd.I, an Islamic Education (PAI) teacher, who has competence in Islamic teachings and experience in teaching students with special needs. The validation results showed that the developed media received an average score of 4.8 out of 5, which falls into the "Very Good" category. This score indicates that the material, design, and interactivity of the media are highly suitable for learning needs at the SLB.

a. Expert Material Test

The material expert test showed an average score of 4.67, which is also in the "Very Good" category. The material presented is in line with the curriculum, conceptually accurate, and easy for students with special needs to understand.

b. Media Test

The media test results showed an average score of 4.33, which means that the media meets the eligibility criteria in terms of display design, audio-visual quality, and interactivity. The media was considered quite interesting and suitable for the characteristics of special needs students.

4. Implementation

a. Media Product Trial

1) First Experimental Trial

The first trial was conducted on 10 students at SLBN 1 Parepare to determine the initial effectiveness of video-based multisensory learning media. This trial aimed to assess students' understanding after using the media for the first time. The results of the first experimental trial are as follows:

Table 2. Results of the First Trial

No	Initials	Average	Criteria
1	A.R	80.3	Good
2	D.F	78	Good
3	F.A	82	Good
4	N.S	75.7	Fair
5	I.H	84	Good
6	R.M	79	Good
7	M.A	81	Good
8	S.A	76.3	Fair
9	H.R	84	Good
10	L.D	82.7	Good
Average		80.3	Good

The data processing results show that the average value for indicator A is 80.2, the average value for indicator B is 81.9, and indicator C has an average value of 78.8. Overall, the total average value reaches 80.3, which is classified as "Good". The data shows that video-based multisensory learning media can have an initial positive effect on improving the ability of special needs students to understand the procedures for wudhu.

2) Second Experimental Trial

The second trial was conducted after minor improvements based on feedback from the first trial. Changes were made to the audio narration, which was slowed down, the addition of guide text, and a more contrasting background colour. The results of the second experimental trial are as follows:

Table 3. Second Experimental Trial

No	Initials	Average	Criteria
1	A.R	92.3	Very Good
2	D.F	90.3	Very Good
3	F.A	94.3	Very Good
4	N.S	88.3	Good
5	I.H	95.3	Very Good
6	R.M	91.3	Very Good
7	M.A	93.3	Very Good
8	S.A	89.3	Good
9	H.R	96	Very Good
10	L.D	94	Very Good
Average		**92.8**	Very Good

The second experimental trial was conducted after revisions and improvements were made to the video-based multisensory learning media based on the results of the first stage evaluation. The average scores obtained by the students showed a significant improvement compared to the first trial. Indicator A obtained an average of 93.2**,** Indicator B obtained 94.0, and Indicator C obtained 91.2**.** Overall, the total average score reached 92.8, which is classified as Very Good**.**

3) Field Trial Results

The research results refer to the description of the pre- and post-tests in the field trial learning process, showing the following data results:

Table 4. Field Trial Pre- and Post-Test

No	Student Name	Pre-test	Post-test	Improvement Notes
1	A.R	80.3	92.3	Increased
2	D.F	78	90.3	Increasing
3	F.A	82	94.3	Increasing
4	N.S	75.7	88.3	Increasing
5	I.H	84	95.3	Increasing
6	R.M	79	91.3	Increasing
7	M.A	81	93.3	Increasing
8	S.A	76.3	89.3	Increasing
9	H.R	84	96	Increasing
10	L.D	82.7	94	Increasing
Average		80.3	92.8	Increasing
Category		**Good**	**Very Good**	Improved

Based on the results of pre-test and post-test on 10 students, there was a significant improvement after using video-based multisensory learning media. The average pre-test score was 80.3 with a "Good" rating**,** while the average post-test score increased to 92.8 with an "Excellent" rating.

A student response questionnaire was also used to determine students' responses, interests, and level of interest in the video-based multisensory learning media that had been developed. The instrument aimed to assess the extent to which the media was able to help students understand the learning material. The following are the results of the students' responses:

Table 5. Results of Student Response Questionnaire

No	Statement	Total Score	Average	Category Results
1	I am pleased to learn using this video about wudhu.	24	4.8	Very Good

2	The images and colours in the video make it easy for me to understand the lesson.	21	4.2	Good
3	The sound in the video is clear and easy for me to hear.	25	5	Very good
4	I learned how to perform wudu correctly after watching the video.	21	4.2	Good
5	I would like to learn more using videos like this.	25	5	Very Good

Based on the results of the student response survey regarding the multisensory video-based learning media, the overall average score was 4.64, categorised as "Very Good**".** This indicates that the developed media was able to capture the interest and attention of the special needs students and assist them in understanding the wudhu material more easily and enjoyably. Students enjoyed learning using videos, found the images and sounds in the media clear, and felt the real benefits in understanding the procedures for wudhu.

5. Evaluation

a. T-Test

The T-test was conducted to determine whether there was a significant difference between learning outcomes before and after using video-based multisensory learning media**.** This test was used because the data obtained came from two paired groups of scores, namely the pretest and posttest scores of the same students. The following are the results of the test:

Table 6. T-Test Results

		t	**df**	**Sig. (2-tailed)**
Pair 1	Pre-test - Post-test	46.3	9	0

Based on the above test results, a Sig. (2-tailed) value of 0.000 < 0.05 was obtained, so it can be concluded that there is a significant difference between the pretest and posttest scores. Thus, the use of video-based multisensory learning media has been proven effective in improving student learning outcomes**.**

b. N Gain Test

The *N-Gain* test is used to determine the extent of improvement in student learning outcomes after using video-based multisensory learning media. The *N-Gain* calculation is as follows:

Table 7. N-Gain Test Results

No	Name	N-Gain	Category
1	A.R	0.61	Good
2	D.F	0.56	Good
3	F.A	0.68	Good
4	N.S	0.52	Good
5	I.H	0.71	Very Good
6	R.M	0.59	Good
7	M.A	0.65	Good
8	S.A	0.55	Good
9	H.R	0.75	Very Good
10	L.D	0.65	Good
Average		**0.63**	**Good**

Based on the results of the N-Gain Test calculation, an average score of 0.63 was obtained, which falls into the "Good" category**.** These results indicate that there was a significant improvement in student learning outcomes after using video-based multisensory learning media. The media developed was effective in improving students' understanding and skills, especially in understanding the material on wudhu in Islamic Religious Education at SLBN 1 Parepare. This improvement shows that interactive media that combines visual, audio, and text elements can strengthen the learning process of students more optimally.

Based on the results of the *N-Gain Test* analysis, it is known that the average score of 0.63 falls into the "Effective" category**.** This indicates that the use of video-based multisensory learning media has a positive effect on improving student learning outcomes at SLBN 1 Parepare, particularly in understanding the material on wudhu. The increase in learning outcome scores from the pretest to the posttest illustrates that this media successfully helped students remember the steps of wudhu correctly and understand the concepts of the requirements and invalidators of wudhu more deeply.

Discussion

The results of research on the development of video-based multisensory learning media for Islamic Religious Education at SLBN 1 Parepare are supported by the multisensory learning theory proposed by Dale through *the Cone of Experience* (Cecep et al., 2024; Davis & Summers, 2014; Dwyer, 2010). According to Dale, learning experiences that involve more than one sense (visual, auditory, and kinesthetic) will result in higher understanding and memory retention (Suryaningsih, 2024). This theory is relevant to research findings that show that SLB students find it easier to understand wudhu material when it is presented visually through pictures and videos, auditorily through narration, and kinesthetically through hands-on practice.

This study is also supported by Behaviourism theory, particularly B.F. Skinner's view which emphasises the importance of stimuli and responses in the learning process (Addaeroby & Febriani, 2024). The multisensory media developed provides various visual and auditory stimuli to students, thereby eliciting positive learning responses (Bruner, 2019). The research results show that after using the media, students became more active, focused, and able to

repeat the steps of wudhu correctly, which is a form *of reinforcement* of the expected learning behaviour.

Piaget and Bruner are also relevant in supporting the results of this study. According to this theory, learning will be effective if students are given the opportunity to organise and construct knowledge through direct experience (Sundari & Fauziati, 2021). Multisensory media helps SLB students connect abstract concepts in wudhu worship with concrete experiences through observation and practice (Dale, 2022). This is in line with the research results which show a significant increase in students' understanding and practical skills after using the media.

In the context of Islamic Religious Education, the results of this study are in line with Abdul Majid's view that PAI learning should be oriented towards *learning by* doing*(Abdiyah, 2021)* , namely providing direct experiences to students so that they understand Islamic values comprehensively. Multisensory video-based media for learning wudhu provides this experience by showing real practices that can be imitated and repeated by SLB students. Thus, the values of worship are not only understood cognitively but also applied psychomotorically and affectively.

The expert validation results showing the *Excellent* category also reinforce Dick & Carey's assertion of the importance of alignment between learning objectives, content, and media (Surur, 2021). The developed media has met the aspects of content, language, and appearance suitability. The alignment between the wudhu material and the PAI curriculum at SLB indicates that the development of the media was based on an appropriate needs analysis, as per the principles of systematic learning design theory.

The significant improvement in learning outcomes based on the *paired sample t-test* and *N-Gain* is in line with Mayer's Multimedia Learning theory, which states that learning will be more effective if information is presented through a combination of text, images, and sound because the human brain processes information through two main channels: visual and auditory. This is evident in this study, where media combining audio narration and visual video helped SLB students better understand the concept of wudhu.

The results of this study also support the Humanistic approach, which places students at the centre of learning. Carl Rogers' theory emphasises that meaningful learning occurs when students feel comfortable, their needs are met, and they have internal motivation. The multisensory media developed creates a friendly, enjoyable learning environment that is tailored to the needs of students with special needs (Carey, 2021). This increases their motivation to learn, as seen in their increased enthusiasm during the trial.

The constructivist theory proposed by Jean Piaget has a strong connection with the results of research on the development of multisensory media in PAI learning at SLBN 1 Parepare. In this theory, the learning process is viewed as an active activity in which students construct their own knowledge through interaction and experience with the environment. This is reflected in the process of developing multisensory media that directly involves students in learning through a combination of visual, audio, and kinesthetic stimuli. This media does not only present information passively but encourages students to explore, observe, and understand the material independently according to their abilities, thus being in line with the main principle of constructivism, namely learning as an active and meaningful process.

The results of the study show that the developed multisensory media meet the criteria of being valid, practical, and effective in improving the learning outcomes of students with special needs. These findings reinforce the constructivist principle that knowledge is built personally based on direct experience. Through multisensory media, students not only receive PAI lesson material such as wudhu verbally, but also practise and relate their learning experiences to their daily lives. Thus, the learning process becomes more contextual and relevant to the students' real world, as emphasised in Piaget's theory that effective learning occurs when individuals relate new experiences to their existing knowledge schemas.

The main advantage of the developed multisensory media is its relevance to the characteristics of SLB students, especially those with intellectual and hearing impairments. This media is designed with simple visuals, contrasting colours, large text, and slow-paced audio. This makes it easier for students to understand the content and follow the steps of wudhu. This learning media also has the advantage of activating more than one learning sense, namely visual, auditory, and kinesthetic. By combining images, sounds, text, and videos, this media helps students understand the concept of wudhu concretely and comprehensively.

The next advantage lies in the attractive and interactive display design**.** Media expert validation results show that the design aspect received a high average score of 4.33 in the "Good" category. The use of simple animations, harmonious colours, and easy-to-understand button navigation adds to the appeal of the media and helps students focus better during learning. Multisensory media has been proven to be effective in improving student learning outcomes. Based on the test results, the average score increased from 80.3 (Good) in the first test to 92.8 (Very Good) in the second test. *The t-test* results showed a significant difference (Sig. 0.000 < 0.05), and the average *N-Gain* value was 0.63 (category "Good"). This indicates that the developed media was able to have a positive effect on students' understanding of the requirements, pillars, and invalidators of wudhu.

Based on the explanation of the advantages of the media, the research also identified shortcomings related to the technical aspects of media use. This is because the media utilises video and audio elements downloaded from platforms such as YouTube. The developed media still focuses on wudhu material in the theme of worship, so the scope of the material is relatively narrow. In fact, Islamic Religious Education learning in SLB covers various other aspects such as prayer, zakat, morals, and faith. Therefore, further development is needed so that multisensory media can be expanded to comprehensively cover all basic PAI competencies.

Another shortcoming is the limited ability of teachers to utilise digital media. Observations show that some teachers still need additional training to maximise the use of features in the media. Digital literacy training for SLB teachers is important so that this learning media can be used sustainably and optimally in the classroom.

CONCLUSION

Based on the results of this study, it can be concluded that the development of multisensory media in Islamic Religious Education (PAI) at SLBN 1 Parepare was carried out by following the ADDIE model stages, which include analysis, design, development, implementation, and evaluation in a systematic manner. Each stage of development took into account the characteristics of students with special needs, teaching materials, and learning

needs that involved various senses. The media developed uses an attractive and interactive visual and audio approach, in line with the learning context at the Special School. The results of the trial show that this media meets the criteria of validity, practicality, and effectiveness, with a significant increase in student learning outcomes and positive responses from students who find it easier to understand the material on wudhu through this interactive media.

The scientific contribution of this study lies in the development of multisensory-based learning media that provides a new perspective in overcoming learning challenges for students with special needs. This study confirms previous findings regarding the effectiveness of multisensory media, but also introduces a new approach in the context of Islamic religious education in special schools, which has rarely been discussed in the literature. This approach opens up opportunities for further research on the adaptation of multisensory media in various other educational contexts, such as science or mathematics learning, which can also be applied to students with special needs.

However, this study has limitations, particularly in terms of the limited number of subjects, which was only 10 students, which may affect the generalisation of the findings. In addition, this study only focused on wudhu material in PAI, so the development of multisensory media for other materials in SLB still needs to be further researched. Time and resource constraints also affected the scope of media implementation, which still needs to be refined so that it can be used more widely. As a suggestion, further research could expand the number of subjects involved to increase external validity, as well as develop similar media for various other subject materials. In addition, the application of the results of this study in the real world, such as in inclusive schools or Islamic religious education, could have a greater practical impact in improving the quality of learning for students with special needs.

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