

Developing integrated digital printing learning module on thematic lessons for students with mental retardation

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Abstract

Education is important for every human because we can think and have a lot of knowledge for life. Children with special needs for mental retardation have problems or problems during the learning process, one of them is thematically. The Research and Development (R&D) research method is carried out by studying research related to the product, developing a product based on these findings, testing it in the field in a setting, and revising it to correct deficiencies found at the proposed testing stage. The development model used in this research is the Analyze, Design, Develop, Implement, and Evaluation (ADDIE) model. Analysis of the needs of mentally retarded students found the competencies need to be improved are the ability to read, write and count or commonly called *calistung*. This model will develop a learning media. The learning media that will be developed are in the form of modules intended for students with mental retardation in grade 2 elementary school (SD). The module was then developed into a learning module that is integrated with digital media. This development resulted in a product in the form of a printed module of the hyper-content type of digitally integrated thematic subject for grade 2 students of the Elementary School with Special Requirements. This module can help the teaching and learning process that is suitable to be applied to mentally retarded children.

Keywords: digital learning module, mental retardation, thematic lesson

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INTRODUCTION

Education is a fundamental factor as knowledge of life that is important in forming dignified and useful human beings for others (Mayasari, 2019; Nasir & Efendi, 2019). Every child has the same right to get an education without exception, as well as children with special needs such as mental retardation (Husna et al., 2019). People with mental retardation have a low intelligence quotient (IQ), which is less than 75 (Chang et al., 2005; Tsao et al., 2017). Children with mental retardation have neurodevelopmental disorders which are characterized by limited intellectual function and adaptive functions which include conceptual, social and practical skills making it difficult to do academic tasks (American Psychiatric Association, 2013; Angelka & Goran, 2018).

People with intellectual disabilities in the severe category have literacy barriers, namely institutional beliefs that they cannot learn literacy in general and phonics with dependence on traditional methods (Browder et al., 2006; Finnegan, 2012). Other challenges in the learning aspects of mentally retarded

students are writing names, mentioning the letters of the alphabet, and retelling stories (Browder et al., 2011). In fact, mentally retarded students need mastery of reading skills, interpersonal, self-management, family life, and socializing with the community and the surrounding environment (Afacan et al., 2017; Ainsworth et al., 2016; Hakları et al., 2017). Mentally retarded children have problems, one of which is in thematic learning.

Integrated thematic learning is the integration of various competency standards from several subjects that allow students either individually or in groups to explore and find holistic, authentic, and meaningful concepts (Hidayati, 2016; Majid, 2014). The application of this learning is carried out through three approaches including determination based on the relevance of competency standards, themes, and problems encountered (Sofyan, 2019). Thematic learning emphasizes student activity so that they get more meaningful learning with better results (Pramudya et al., 2019).

Maelani & Sukriadi (2020) conducted research on learning the basic movement of running by showing the results of the analysis that mild mentally retarded students would be more interested in sports learning models modified by thematic games (Maelani & Sukriadi, 2020). Yulianti (2012) explains that the implementation system of special school thematic learning is still not optimal because delivery tends to focus on one subject only so that it does not appear thematic with other subjects (Yulianti, 2012). Fadiana & Citra Dewi Rosalina (2020) stated that thematic learning that integrates semiotics with creative and attractively colored pop-up book media can increase the confidence of verbal and nonverbal mentally retarded students in communicating (Fadiana & Citra Dewi Rosalina, 2020).

Based on the results of observations and interviews at SLB Negeri 3 Jakarta involving a second grade teacher, two mentally retarded students, and two parents of mentally retarded students. It shows that the obstacles are often faced in the learning process are mentally retarded students find it difficult to remember, accept, and convey something. In addition, the print module used is still in the same shape as a public school which seems monotonous, making learning less interactive and effective, especially during distance learning. Schools around the world began closing in March 2020 in response to the rapidly growing COVID-19 pandemic, resulting in drastic changes to the education system (UNESCO Institute for Statistics, 2020). Learning is carried out remotely so that the use of technology is urgent (Scully et al., 2021). The use of technology-based learning transforms the student learning experience, encouraging the development of digital literacy, critical thinking, collaboration, and other twenty-first century competencies (Starkey, 2020).

Analyzing the results of observations that have been made, the problem of online learning for mentally retarded students is the difficulty in the learning process. Referring to the results of research that has been done by previous researchers, there are still some shortcomings that need to be innovated in the development of learning modules for mentally retarded students. Students with disabilities find it difficult to adapt to the curriculum, programs, and general school environment so that special program designs are needed to improve their abilities (Hakları et al., 2017). It is necessary to have more eye-catching learning media with an integrated system that is cooler so that it can attract students' interest. Therefore, the researchers designed the development of digital printing integrated learning modules in thematic lessons for students with mental retardation. This module is based on a digital integrated blended learning learning system through QR code barcodes with larger writing and animated

characters that make this book more interesting. This learning model involves the active role of families and teachers who are oriented to students' abilities so that this method is expected to run in a comprehensive, integrated, sustainable, and functional manner.

RESEARCH METHOD

This research was conducted in October 2021-January 2022 at SLB N 3 Jakarta, which is located at Karet Pasar Baru Barat VII Street, 6th neighbourhood, 2nd hamlet, Karet Tengsin, Tanah Abang sub-district, Central Jakarta city. In this study, research and development (R&D) research methods were used. In general, development research is used to develop and validate educational products (Borg & Gall in Setyosari, 2016: 276). This step is usually known as the R&D cycle which consists of studying research findings related to the product to be developed, developing a product based on these findings, testing it in the field in a setting that will later be used, and revising it to correct deficiencies found at this stage. proposed test. In more stringent R&D programs, this cycle is repeated until field test data show that the product meets its behaviorally defined objectives.

According to Sukmadinata (2009:164) research and development is a process or steps to develop a new product or improve an existing product, and can be accounted for. This research is longitudinal, meaning that in conducting this research, one must pass step by step. According to Mulyatiningsih (2011:161) research and development aims to create new products through the development process. In addition, according to Seels & Richey in Setyosari (2016: 277) that R&D research is a systematic study to design, develop, and evaluate programs, processes, and learning outcomes that must meet internal consistency and effectiveness criteria. The product developed in this research, namely the learning media used in special schools, especially mentally retarded students, becomes a learning system that can be integrated with digital systems in the form of student book modules. The development model used in this research is using the ADDIE model.

The ADDIE model is an effective design framework used in making learning development systems amidst the many learning systems used today. ADDIE is an abbreviation which means Analyze, Design, Develop, Implement, and Evaluation. This research method with ADDIE is suitable to be used to initiate a certain product at the idea level and test the effectiveness of the idea (Tung, 2017: 57-58). The data collection technique used in this study is to combine several techniques, namely by conducting library research, observation and interviews. To get accurate data, the researcher conducted data validity by time triangulation, source triangulation and technical triangulation, while to get maximum results the researchers analyzed the data that had been obtained by collecting data, data reduction, presenting data and drawing conclusions.

RESULTS AND DISCUSSION

The research conducted is to develop a learning media in the form of a module that is integrated with digital media. This module developed is intended for students with mental retardation in grade 2 elementary school. The research that has been carried out has only reached three stages, namely the Analyze, Design, and Develop stages.

Analyze Stage

The results of observations that have been carried out at SLB N 3 Jakarta show that the online learning system applied during the pandemic has not been able to provide maximum learning outcomes to students. This is because the learning system used still adheres to the conventional system, in which the teacher only provides learning materials in the form of printed books in PDF form and then the parents print the learning materials. Thus, in a learning model like this, there is a lack of interaction between teachers and students. As stated in Syairul Bahar's research (2020) that online learning which only provides material to students causes a lack of interaction between teachers and students. In addition, this kind of learning model will also reduce students' learning motivation. Thus, learning outcomes are less than optimal (Bahar, 2020).

At this stage, data was also obtained that the learning module provided was less attractive and had a writing size that was too small for mentally retarded students. In fact, students prefer books that are illustrated and colorful, as well as have large and clear writing. Thus, the given module reduces students' motivation and interest in learning. This condition is also supported by research conducted by Rohmatin (2017) which states that learning resources that are not accompanied by interesting media make students easily bored and find it difficult to understand the learning material provided (Rohmatin, 2017). Thus, the module to be developed needs to be adapted to the needs of mentally retarded students.

At this stage, the researchers also conducted research on 2 out of 6 students with moderate mental retardation (C1), the results of which showed that the two students had limitations in socializing with their peers. In the first sample, students have difficulty in reading or are still in the spelling stage, but they have more interest in coloring pictures. The same thing also happened in the second sample, where students preferred drawing activities. However, in this second sample, students have good memorization skills. This condition is also supported by research conducted by Alavi, et al (2013) which states that mentally retarded children experience learning disabilities, personality problems, and lack of adaptive behavior (Alavi et al., 2013).

Then, students also experience a condition of lack of focus during the learning process. Observations made showed that online learning for mentally retarded students still uses a guided asynchronous system, which the learning process is still limited only by giving assignments through the WhatsApp application which does not pay attention to the needs of each student. To overcome this, it can be done by combining the use of modules and digital learning, in which this process combines face-to-face instruction with computer-mediated instruction, thus enabling teachers to personalize learning according to the needs of each student. As stated in Ade Wahyudin's research (2020) that a learning model that combines the provision of material using modules (asynchronous) and face-to-face learning digitally (synchronously) is considered effective for increasing students' motivation and understanding of learning materials, so it can improve student learning outcomes (Wahyudin, 2020). This learning model is considered possible to apply, considering that students are able to operate gadgets with parental supervision.

Design Stage

In the preparation of the learning model, identification of learning objectives is carried out and determining the required learning activities. The learning

objectives to be achieved are determined based on basic competencies and indicators of competency achievement in the syllabus of students with mental retardation in grade 2 elementary school. The learning objectives include: 1) students can thank others after receiving help, 2) students recognize the shape of objects around them, 3) students are able to color neatly, 4) students are able to sing children's songs. children according to the right lyrics and tempo, 5) students recognize the rules that need to be obeyed, 6) students are accustomed to being independent, 7) students understand how to throw and kick the ball slowly, and 8) students understand how to catch the ball. Learning activities are designed using learning media in the form of modules that are integrated with a digital system with the flipped classroom learning model.

The material that will be given in the learning module is the thematic subject on theme 1, entitled My Family Members with the sub-theme of My Father. Each theme will contain material from several subjects, namely Indonesian language, mathematics, Cultural Arts and Crafts (SBdP), Pancasila and Citizenship Education (PPKn), and Physical Education, Health, and Recreation (PJKR). In the theme 1 material, it will be divided into 6 lessons with each lesson containing 3-4 subjects. Lessons 1 and 2 will include Indonesian language, mathematics, and SBdP subjects. Lesson 3 contains subjects 1 and 2 with additional PPKn subjects. And in lessons 5 and 6, PJKR subjects are presented.

This developed module is adapted to the needs of mentally retarded students, which focuses on increasing literacy ability. To be able to achieve this goal, the module is packed with various activities such as reading, writing, and associating shapes. Then, the subtitles used are in the form of short command sentences that are easily understood by students, such as "let's read", "let's write", "let's answer", "let's observe", "let's find out", "let's color", and "let's sing". This module also provides a reflection sheet that is used to recapitulate the progress of students. This is supported by research conducted by Sholichati (2015) which states that mentally retarded students have a below-average level of intelligence, so the use of short and easy-to-understand sentences in the material is one strategy so that students can easily understand the subject matter given by the teacher (Sholichati, 2015). Furthermore, it was stated by Mahanal in Bahri, et al (2017) that the existence of learning reflection can help change the way of learning to improve student learning outcomes.

In this module, the material is designed in various forms of graphic design. It aims to attract the attention of students to be more motivated and enthusiastic in the learning process. This module has a mascot in the form of an orange cat character. This cat character was created with the aim of being a study friend like a peer for students. The existence of this study buddy is intended so that students feel comfortable both psychologically and emotionally during the learning process. The existence of this cat character is also used to apply role-playing techniques. This role-playing technique can help develop students' interpersonal skills, which aim to help identify themselves, understand others, express feelings, and adapt to the environment. It was also stated by Cahya, et al (2018) that applying role-playing techniques can help mentally retarded children in forming and improving interpersonal skills. In addition, this module is also equipped with a barcode containing audio, images, and learning videos. The barcode can be scanned which will later provide directed and orderly instructions to model or simulate the behavior and attitudes given. This technique aims to make it easier for mentally retarded students to understand and accept new behaviors. As stated by Dyah Retno

Wulandari (2016) that mentally retarded children have difficulty in learning abstract and new things, so they need real, structured examples, and continuous practice to apply the new information provided (Retno, 2016).

Furthermore, the flipped classroom learning model is a learning model in which students learn the subject matter before class starts. Thus, the process of teaching and learning activities carried out in the classroom is focused on discussing material or problems that have not been understood by students. This model presents learner-centered learning. As stated in Ilie's research (2019) that the flipped classroom learning model can change the time spent explaining material in class into an individual experience, so that students have the time, atmosphere, and pace of learning that adapts to their needs (Illie, 2019). Students can also feel not bound by space and time so they feel comfortable in learning. Then, this learning model can also encourage students to apply the knowledge they get in practical situations, and it allows students to experience more diverse experiences. In addition, this model can also improve the thinking and skills of students inside and outside the classroom. This is supported by research conducted by Damayanti and Sutama (2016) which states that the flipped classroom learning model is proven to increase students' motivation, activity, and skills. In addition, this model can also increase the level of self-confidence of students in the learning process (Damayanti & Sutama, 2016).

The flipped classroom learning model developed for this module allows for personalized learning, which is very much needed for mentally retarded students. This developed module is designed by applying the flipped classroom model which provides learning materials that can be studied before the class starts which have been integrated with learning in the classroom. This module is also equipped with instructions for teachers to conduct synchronous learning and guidance for parents to accompany asynchronous learning.

Development Stage

At this development stage, a validation process is carried out to ensure the design of the designed module can present the message well. The validators needed include material and media experts. According to the material expert, it is stated that the learning objectives must have a clear formulation and are following the standard, which includes one operational verb. However, in the module that has been designed only general learning objectives are listed so it is necessary to add specific learning objectives. Improvements that will be made referring to suggestions from the validator, namely adding specific learning objectives in each lesson. Furthermore, for the learning material presented is considered very good accompanied by examples that are easy to understand and in accordance with the description of the material. The description of the material given is also assessed according to the times.

Implementation Stage

The implementation in this study was carried out through product trials, with the aim of knowing about the effectiveness of the resulting development products, the following is a description of product trials for developing digital-based learning modules for mental retardation.

Product Trial Design

The trial design carried out has 3 stages, namely:

1. Expert test or validation, this test is carried out with users who are module experts and material experts.
2. Individual trials aimed at users, namely teachers of grade 2 thematic subjects with mental retardation.
3. Small or limited group trials with users being grade 2 mentally retarded students.

Trial Subject

The trial subjects of this mentally retarded thematic module product were carried out on consumer product users, namely:

1. Teachers of thematic subjects with a mental retardation target of 1 person.
2. Mentally retarded students SLB Negeri 3 Jakarta.
3. Small group trial using interactive learning module users as many as 6 students in class 2 mentally retarded. This number is based on data available at special schools at SLB Negeri 3 Jakarta so that learning for all students becomes more effective and digitally integrated.

Evaluation

The last process in the ADDIE model is the evaluation phase. It is very important to evaluate each step that must be taken to ensure the appropriateness of the instructional design and materials in meeting the needs of the learner. In addition, when talking about evaluation, there are two types of evaluation, namely formative evaluation and summative evaluation. First, formative evaluation is a continuous process carried out when working on teaching materials in each phase of the ADDIE model. There are three basic processes of formative evaluation, namely one-to-one, small group evaluation, and field trials. During the evaluation process, you can select participants who have similar features to actual learners and evaluate the material based on that.

In this study, the evaluation received by the research team was that the design displayed on the learning module had too many icons indicating that they were not Indonesian. However, the learning content is in accordance with the needs and parents are happy with this digitally integrated learning module because it makes the learning process easier for their children. While the evaluation carried out on mentally retarded children can not be studied quantitatively because the learning process is still ongoing. However, if viewed qualitatively based on the learning that has been carried out from the end of January to February, mentally retarded students are more enthusiastic in carrying out learning.

CONCLUSION

The background is that mentally retarded students have less effective learning because the learning modules are still in print with small letters and simple designs and there is no digital integration even though we have entered the industrial era 4.0. This research resulted in a product in the form of a printed hyper-content module for digitally integrated thematic subjects for grade 2 students of the Elementary School for Special Mental retardation. The development of this module is based on the results of the needs analysis conducted by the author. involving a second-grade teacher, two mentally retarded students, and two parents of mentally retarded students. From these results, a learning module for grade 2 mentally retarded students was formed

which was integrated with a digital system. The results showed that teachers felt helped by this module because it was more structured, parents did not have to print out the modules for each thematic subject because the module had covered 1 semester and mentally retarded children looked happier when their learning was using this digital integrated learning module.

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