

Analysis of Special Assistance Teachers' Needs for Hypermedia-Integrated Science Learning Modules in Junior High School

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Abstract. This study aims to analyse the needs of special assistant teachers in the subject of Natural Science (IPA) at the School of Human Junior High School. The method used was a qualitative approach. Data collection was carried out through observation of 4 special assistant teachers who were conducting the learning process. After that, researchers conducted in-depth interviews with 8 special assistant teachers. The results of this study indicate that special assistant teachers need a guidebook as a guide for them in dealing with children with special needs in science subjects. This is because special assistance teachers experience difficulties when the class becomes uncondusive. In addition, the material related to biological science is a challenge for special assistant teachers in training children with disabilities to memorise the material. So, the hypermedia integrated science learning module is an alternative guide for special assistance teachers. They not only read the guide but can also listen and observe the steps in the science learning process through the hypermedia integrated learning module. This study concluded that with the existence of science learning modules, special assistance teachers can improve their pedagogical competence. Therefore, this research has implications for inclusive education through the development of hypermedia-integrated learning modules that can provide convenience for special assistant teachers in dealing with the obstacles of the learning process for children with disabilities in the classroom.

Keywords: learning module; science education; hypermedia; special support teacher; children with special needs

1 Introduction

In the current technological era, the field of educational technology has various challenges in the world of education. These challenges relate to various technology-based learning models[1]. However, the development of learning models not only focuses on the technology developed but also the understanding and output of users. Therefore, educational technology becomes a complex and integrated process, including procedures, ideas, tools and organizations to analyse problems related to all aspects of learning. In addition, designing, assessing and managing the solution of these problems. Problem analysis in education is not only limited to making observations and

identifying the learning needs of students but also the needs of teaching materials and learning modules that will be used by teachers.

Inclusive education is education that unites children with special needs with normal children in general to carry out learning activities[2]. Several academics consider inclusive education to have benefits and provide opportunities for children with special needs to receive these educational services [3][4]. In other words, inclusive education stipulates that schools must provide accommodation to all children regardless of physical, intellectual, social emotional, linguistic or other conditions. According to Walton [5] there are still problems with inclusive education because children and adolescents with disabilities are disproportionately represented in the number of those who do not attend school. In addition, children with special needs also need access to proper education as their supporting needs[6]. In various countries, the application of the principles of inclusive education has emerged as a policy. Policies related to inclusive education are based on the idea of equitable education and social equality[7]. Thus, the presence of inclusive education aims to ensure that children with special needs also have access to education. According to Buchner and Proyer [8], inclusive education has a long process to fight for children with special needs. In the 1980s, children with special needs were excluded from regular schools when the implementation of special schools reached its peak. Furthermore, in 2007 the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) sparked a new discourse regarding school-based inclusion for children with disabilities. Therefore, inclusive education in various countries differs according to the policies formulated.

In inclusive education, there are two types of teachers whose job is to help children with special needs, namely special guidance teachers and special assistant teachers. Generally, special guidance teachers have the task of being learning advisors for children with special needs. Thus, the qualifications required by special guidance teachers are a background in special education. Different from the qualifications of special assistant teachers. The results of a study by Berlinda and Naryoso [9] stated that special assistant teachers have a role as assistants to class teachers. Special assistant teachers are also tasked with providing basic learning assistance, training the skills and independence of students with special needs. Therefore, special assistant teachers must also have competencies that are in accordance with the needs of inclusive education. Azmi and Nurmaya [10] explained that special assistant teachers also have a role to help provide understanding to students who have difficulty learning and become trainers who are able to hone the skills of students with special needs according to their potential.

However, special assistant teachers also face various challenges such as extreme anxiety, excessive workload and inflexible work schedules, endless non-teaching commitments and lack of career prospects and development paths [11]. In addition, special assistant teachers face various challenges such as burnout due to excessive working hours and additional tasks[12]. Unsupportive environmental factors also cause special assistant teachers to experience fatigue and feel less supported[13]. Thus, synergy is needed between schools and special assistant teachers. According to Morgenthaler et al.[14] the problem of special assistant teachers also lies in their limited understanding of how to influence the activities of children with special needs in learning activities. This is because children with special needs has different characteristics from non-

children with special needs students. During learning, special assistant teachers must be able to manage the feelings of children with special needs students so that they can concentrate on learning. This management is not easy for special assistant teachers to do. Ibrahim et al [15] explained that to meet the needs of students with special needs can be done through the development of learning modules as a tool that can help special assistant teachers teach. However, the development of the module must be arranged with the needs of special assistant teachers so that they can easily understand the module. Therefore, this study aims to analyze the needs of special assistant teachers for science subject learning modules for students with special needs in junior high schools.

2 Method

This research was conducted through a qualitative approach based on Creswell[16]. Case study is a research design that is conducted to gain in-depth understanding and learning needs for special assistance teachers. Thus, the case study used by the researcher can make the researcher understand the needs of special assistance teachers for learning modules in accordance with the facts through a specifically studied case. The participants in this study were nine special assistance teachers and the principal at School of Human Junior High School of grade one. The selection of participants was adjusted to the needs of the research through purposive sampling technique.

Table 1. Characteristics of Special Assistance Teachers

Code Name	Age (Years Old)	Length of Work (Years)
F	22 – 27	3
HZ	22 – 27	2
HR	22 – 27	3
OP	22 – 27	2
AB	28 – 31	5
CF	22 – 27	4
FP	28 – 31	8
MA	37 – 41	10
P	28 – 31	1

The data collection process was carried out by observing four special assistance teachers who were conducting the learning process in grade one. The learning material delivered by special assistance teachers is science. Participatory observation was carried out by researchers following learning activities directly to see the activities carried out by special assistance teachers. The observation indicators were based on Johnsen and Skjørten's [17] eight tasks of special assistance teachers, namely 1) assisting the class teacher when preparing the class; 2) assisting children with special needs in completing tasks; 3) arranging activities that can be done inside and outside the classroom; 4)

preparing children with special needs for routine conditions; 5) emphasising the success of children with special needs and providing appropriate rewards; 6) minimising the failure of children with special needs; and 7) providing fun teaching to children with special needs. In addition, in-depth interviews were conducted for 85 minutes with each participant after the learning process. In the interview process, the researcher used a semi-structured interview guide. The tools for the interviews were smartphones and notebooks. The interview guidelines for accompanying teachers related to their involvement in developing the curriculum, learning activities carried out, and obstacles faced during learning activities. In addition, the interview guidelines also contained the needs of learning modules expected by special assistance teachers. The interview guidelines were also adapted to the pedagogic competencies of Booth and Ainscow [18], namely responding to the diversity of children with disabilities, designing learning and optimizing the role of special assistant teachers. Researchers conducted data analysis techniques through the following stages: data collection, data reduction, data presentation and conclusions.

3 Results and Discussions

Researchers analysed the results of interviews, observations and documentation that had been conducted with special assistance teachers. With regard to the duties of special assistance teachers, participants provided various views as follows.

Table 2. Accompanying Teacher Interview Results.

No	Questions	Answers
1	Tasks of the special assistance teacher	<p>‘In addition to accompanying children's activities at school, I also provide teaching materials and also teach children in life skills activities that the child has not mastered. Such as washing dishes, tying shoes, tying hair etc.’ (HZ, June 2024)</p> <p>‘Giving direction to students, helping students in the learning process, providing material or learning according to students’ abilities and directing students to follow the learning process well.’ (P, June 2024)</p>
2	Obstacles faced	<p>‘The obstacle I face is seeing how the child's mood is, if since morning the child comes in a bad mood, it will be sure to interfere with future learning activities. Then when the child has a tantrum or is excessively happy, it interferes and makes it difficult for the child to focus.’ (HR, June 2024)</p> <p>‘The obstacles faced are when students are in a bad mood so they cannot participate in activities optimally.’ (OP, June 2024).</p>
3	Training that has been done	<p>‘Training on how to make syllabus reductions.’ (FP, June 2024)</p> <p>‘So far I haven't done any training, it's just that I did an individual approach first and then adapted interactive learning’ (F, June 2024).</p>

4	How to emphasise the success of children with disabilities	‘By giving something that the child likes is a reward for him, giving praise praise that makes him happy. Consequences for inappropriate behaviour by doing things that are difficult for him such as squatting, doing physical exercise or giving space for him alone until the child realises that what he is doing is wrong.’ (HZ, June 2024)
5	Materials in science that are difficult to explain to children with disabilities	‘The material on the circulatory system, because there are many names that are a bit difficult to pronounce’ (AB, June 2024). ‘So far, the material regarding the branches of biological science is very much that must be memorised and science analysis questions’ (CF, June 2024).

The interview results in Table 2 show that the special assistance teacher tries to teach students about life skills activities that they have not mastered. However, in the learning process, there are obstacles for special assistance teachers, namely when dealing with children with disabilities who come in a bad mood. Special assistance teachers also experience difficulties in science subject matter such as related to branches of biology and explaining the circulatory system. When researchers asked about the guidebook, the special assistance teachers generally said that they did not have a guidebook.

‘I have not received or read the guidebook for special assistance teachers. So, I only understand my duties as a special assistant teacher through training and direction from the principal. It would be great if a guidebook could be developed as a direction for us special assistance teachers.’ (F, June 2024)

‘The module that is needed is a module that is suitable for each child with special needs or a module that is needed for accompanying teachers on how we deal with children who have tantrums or provide supportive material for children with special needs that is fun.’ (HZ, June 2024)

The results of the interviews with F and HZ show that the special assistant teachers at School of Human Junior High School do not have a guidebook. So they need a learning module that contains the characteristics of children with disabilities to help special assistant teachers deal with children with disabilities during science learning.

The implementation of inclusive education is highly dependent on how teachers or educators provide learning to students. This certainly makes the School of Human Junior High School must have teachers or educators who are qualified, multitalented and meet the criteria to be able to realise the implementation of inclusive education. Not only in the aspect of teachers or educators, the management of learning methods used is one of the most important aspects because it affects the implementation of inclusive education. Currently, School of Human Junior High School has 18 regular teachers, 15 special assistant teachers and 3 therapists where each teacher has their own role for each learning to students. It has a special team in curriculum preparation, namely the School Educational Centre for All (SEC). Especially in grade one of School of Human Junior High School has 4 special students with 3 special assistant teachers, the obstacles experienced include 2 children having Attention Deficit Hyperactivity Disorder (ADHD) obstacles, 2 children have Autism Spectrum Disorders (ASD) obstacles. The main task of the special assistant teacher is to reduce the syllabus material from regular or non-special needs students to suit the needs of special children, assist students in learning

activities and school activities, make worksheets according to the material that has been given, and teach reduced material according to the needs of special children which can be different for each child according to their needs.

The implementation of learning at School of Human Junior High School has a collaborative method which places two teachers in the classroom, namely collaboration between one core teacher and one special assistant teacher. This is crucial in demonstrating the benefits for learners, especially in the implementation of inclusive education. The level of teacher collaboration that emphasises collaborative teaching as practised at School of Human Junior High School where the teacher and special assistant teacher plan, implement and evaluate the same lesson for a group of learners. This shows how co-design allows teachers and special assistants to meet the needs of both regular and special needs learners, which is important in inclusive education.

One important factor in the implementation of inclusive education is the adjustment of the curriculum system and learning methods, which must be considered by education personnel. In this case, the School of Human Junior High School had the opportunity to send one representative of its teaching staff to attend several trainings that had been organised. The training was conducted using the lecture method, and then the representative repeated it to explain to fellow educators. However, the special assistant teacher at School of Human Junior High School grade 7 has an educational background that is not from a special education graduate, which means that it certainly takes longer to absorb information if it is delivered only by the lecture method, the lack of learning media sources regarding how and the process in adjusting the curriculum system and learning methods makes educators, especially special assistant teachers, encounter obstacles in the process of reducing the curriculum.

The role of special assistant teachers is very influential for the implementation of inclusive education systems, programmes and education in schools that provide inclusive education such as the School of Human Junior High School, because special assistant teachers have closer communication with special children so that special assistant teachers have a considerable task in implementing inclusive education. The use of appropriate learning methods to conduct teaching will help teachers and special assistant teachers to be able to collaborate with students in carrying out more effective learning, especially in schools that organise inclusive education.

However, there are often some obstacles that are found during implementation and one of them is when changing special assistant teachers who have an educational background that is not from the special education study programme. In this case, of course, the special assistant teacher cannot directly understand the situation in the classroom and also the condition of the students. The main task of the special assistant teacher, one of which is to reduce the syllabus of material from regular students and adjust it to children with disabilities, must be done first by the special assistant teacher before learning because this is very important for the smooth process of providing material and adjusting the technique of providing material for children with special needs.

Barriers that occur in the learning process at School of Human Junior High School in implementing inclusive education must be addressed immediately by the school. In organising the learning process, schools must continue to evaluate the teaching staff, namely teachers and special assistant teachers. The replacement of special assistant teachers is one of the obstacles that must be evaluated by the school and found a solution because it can affect the learning process that will be provided by special assistant

teachers to students. Special assistance teachers must first understand the basis of the implementation of inclusive education, which is part of the education procedures currently used in education in Indonesia. In this case, the special assistance teacher did not fully understand the meaning of inclusive education and its implementation. Special assistant teachers must be able to understand the meaning of inclusive education and be able to implement it in the learning process in the classroom with students. The special assistant teacher will be a major influence in the implementation of inclusive education in the classroom. If special assistant teachers cannot understand the meaning of inclusive education and implement it, it can certainly hamper the learning process. In this case, it is necessary to evaluate and improve the competence of teachers in implementing inclusive education.

Based on the Law of the Republic of Indonesia No. 14 of 2005 concerning Teachers and Lecturers Article 10 teachers are required to have pedagogic competence, personality competence, social competence and professional competence. Some previous studies assessed that of the four competencies, a companion teacher needs to improve pedagogical competence [19]. Given that the number of accompanying teachers often does not match the number of children with special needs in the classroom [20]. Thus, special assistant teachers are also required to have pedagogical competence skills in order to have a good understanding and be able to improve the development of children with special needs at the junior high school level [21]. Therefore, it is necessary to develop a learning model for special assistance teachers to improve pedagogical competence.

The development of learning modules is not only limited to students but also special assistance teachers. The module development can be done through the provision of learning media sources. In conducting module development, it is inseparable from the role of educational technology. In accordance with the definition of Educational Technology, where one of its roles is to facilitate learning, this can certainly be done in various ways so that the learning process for students goes well. According to Jacobs [22] educational technology is an alternative for teachers to improve their pedagogical skills. Several studies reviewed that the integration of educational technology supports teachers in improving their pedagogical competence which includes the cognitive domain [23][24]. Thus, educational technology integration is not only provided for learners' learning activities but also teachers. However, Christopoulos and Sprangers [25] reminded the importance of trialling the technology integrated into the education system.

According to Sanchez et al. [26], schools that provide inclusive education must identify barriers to learning from the views of both learners and special mentor teachers and special assistant teachers. Based on the barriers that occur in the learning process at School of Human Junior High School, the integration of educational technology through hypermedia can be an alternative for special assistance teachers to improve their pedagogical competence. According to Darmadi et al. [27] hypermedia is interesting to develop because the media offered can represent information non-linearly in the form of text, audio, video and hyperlinks. Generally, the use of hypermedia is done to facilitate learners in order to motivate them to read and understand the reading more quickly and accurately [28]. In addition, hypermedia is a learning alternative for students to train them to learn independently [29]. However, several studies that have developed hypermedia have not led to an increase in the pedagogical competence of

special assistance teachers. Meanwhile, special assistance teachers need learning modules that can be used as their basis for teaching children with special needs.

Based on the results of a study conducted by Ramadan and Ain[30], modules are teaching materials that are arranged systematically and can be used by learners so that they can carry out learning activities independently. Several academics conducted training and development of learning modules to improve digital literacy, professional competence and pedagogical competence of school teachers[31][32]. Given that the study conducted by Penney et al. [33] inclusive education teachers also need conceptual designs that can help them to understand inclusive education. The understanding of inclusive education should be embedded in accompanying teachers as a school strategy to convince parents that the inclusive education provided by the school is prepared[34].

Module development for special assistance teachers using hypermedia is expected to provide good benefits for special assistance teachers at School of Human Junior High School in preparing for learning. The use of hypermedia in module development will make it easier for developers to make special assistance teacher modules in implementing inclusive education because later developers will make a product in the form of a module by first identifying problems related to the implementation of inclusive education that hinder special assistance teachers in implementing inclusive education.

4 Conclusions

This study concludes that special assistance teachers have an important role in the running of inclusive education. Therefore, it is important for schools to provide direction to special assistance teachers to overcome obstacles in the learning process. The presence of technology is a tool for special assistance teachers in developing their abilities in the learning process. Thus, the need for a learning module that is easy to use by special assistance teachers is a must. Therefore, a learning module that can be used by special assistance teachers in understanding the characteristics of children with disabilities in the science learning process through hypermedia development. Future research is expected to develop hypermedia-based learning modules and be tested by special assistance teachers.

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