(RESEARCH ARTICLE)

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Development of a questionnaire on high school teachers' perceptions of differentiated learning in schools

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Abstract

Differentiated learning is an approach that adapts to each student's learning needs. Teachers provide facilities that suit students' individual needs, bearing in mind that each student has unique characteristics and cannot be treated uniformly. This article aims to provide a deeper understanding of learning differentiation and explore teachers' perceptions regarding its implementation in the classroom. The results of interview research show that the purpose of differentiated learning is to coordinate learning by paying attention to students' interests, readiness and learning preferences. This aims to help all students achieve learning goals, increase motivation and learning outcomes, and establish a harmonious relationship between teachers and students, so that students are more enthusiastic about learning. In conclusion, differentiated learning gives students the opportunity to learn naturally and efficiently with the help of teachers who are able to combine the required methods and approaches. There are several obstacles that arise, such as limited facilities and infrastructure that support the differentiated learning process, teachers need time to prepare learning instruments, appropriate methods and appropriate media, implementing differentiated learning requires relatively high costs and teachers must have good classroom management skills. .

Keywords: Questionnaire Development; Teacher Perceptions; Differentiated Learning, High School, ADDIE Model.

1. Introduction

Curriculum plays an important role in education. The curriculum is a vital element or component that supports the goals of education in Indonesia [1]. The Merdeka Curriculum also reflects the Indonesian education system's efforts to become better, even though it is still in the process of development. Many educational units have not fully developed a flexible curriculum, tailored to the needs of each student [2]. Each student has a different level of learning readiness, interests, talents and learning styles. Therefore, every student needs a teaching approach that suits his or her characteristics and uniqueness in order to understand the competencies and learning material well. The learning process must pay attention to students' individual characteristics and differences. Even though the implementation is not perfect, teachers have tried to provide the best in differentiated learning according to the current Merdeka Curriculum.

Differentiated learning is an effort to adapt the learning process to meet the learning needs of each student. Differentiated learning has become known in Indonesia since the first driving teacher education program was implemented in 2020. Differentiated learning is an effort to combine differences to obtain information, develop ideas, and convey student learning outcomes [3]. This learning accommodates individual needs to gain learning experience and understand the concepts being studied [4].

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There are three important aspects of students' learning needs in differentiated learning [3], [5], namely: 1) learning readiness, where students are ready with new material to face the next lesson; 2) interest in learning, namely students' personal motivation to learn; and 3) student learning profiles, related to language, health, culture, environment, family and other specific factors. Differentiated learning uses multiple approaches in content, processes and products [6]. Content differentiation is related to what students understand and learn, process differentiation is related to how students obtain information, and product differentiation is related to student learning outcomes. Research shows that differentiated learning can improve student learning outcomes.

Differentiated learning begins with identifying students' learning readiness, learning interests, and learning profiles to assist teachers in adjusting the presentation of content, processes, and products according to students' needs [3]. Differences in student dimensions, such as readiness, profile, and interest in learning, can be managed by presenting variations in content, processes, and products [7]. Therefore, before implementing differentiated learning, teachers must be able to identify the needs of different students. After that, teachers can determine variations in content, processes and products that suit student needs, so that learning runs optimally. Variations in content, processes, and products are strategies in differentiated learning and are divided into three levels: below target, on target, and above target [8]

Differentiated learning involves four main aspects. First, content differentiation, which includes all material studied by students, including curriculum and learning materials. In this case, the teacher adjusts the curriculum content and learning materials according to the learning style and abilities of each student. Second, process differentiation, which refers to how students absorb and adapt information. With so many different learning styles, classes must be tailored to meet students' needs. Third, product differentiation, namely the way students show their understanding. Fourth, the learning environment, which includes all conditions and factors around the classroom that influence the learning process [9], [10], [11].

2. Research Methods

This research is development research using the ADDIE model [12] . The ADDIE model consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. The subjects in this research were two validators who were expert lecturers in the field of assessment and evaluation.

Figure 1 ADDIE development steps

The steps of this research follow the ADDIE stages. In the Analysis stage, researchers looked for reference sources about online learning and determined the aspects that would be measured from mathematics education students' perceptions of online learning. The aspects measured include students' perceptions of themselves while taking online lectures, their expectations of the online learning process, and their perceptions of the online learning that occurs. In the questionnaire, respondents can express agreement or disagreement with the statements given by choosing between strongly disagree, disagree, agree, or strongly agree. The process continues to the Design stage by designing the questionnaire grid and questionnaire statement items.

In the Development stage, a questionnaire was developed by asking for assessments, suggestions and input from two validators. Assessment scores 1-5 are analyzed using a Likert scale. The assessments from the two validators are then added up and averaged to determine the validity category of the instrument being developed. Suggestions and input from validators are used as material to improve the questionnaire. The scores are then interpreted according to the validity criteria [13], as listed in Table 1.

Table 1 Validity score interpretation criteria

No.	Percentage (%)	Information
1	0% - 20%	Invalid
2	21% - 40%	Not valid
3	41% - 60%	Fairly valid
4	61% - 80%	Valid
5	81% - 100%	Very valid

In the Evaluation stage, which is the final stage of the ADDIE development model, an evaluation of the product that has been developed is carried out using a formative test at the end of the class. The results of this evaluation are used to provide feedback on the product, which is then adjusted based on the evaluation results obtained.

The data collected from this research consists of qualitative and quantitative data. Suggestions for improvement from the validator regarding the questionnaire regarding high school teachers' perceptions of differentiated learning are included in the qualitative data category. Meanwhile, the questionnaire validation scores and questionnaire test scores are quantitative data. Data on suggestions for improvement from validators was analyzed using qualitative descriptive analysis techniques. Next, quantitative descriptive analysis techniques were used to analyze the scores obtained from testing the teacher perception questionnaire towards differentiated learning. The results of these two analyzes are used to determine whether the questionnaire developed is suitable for use.

3. Results and Discussion

3.1. Analysis Stage

The analysis stage is a step to look for references about differentiated learning and determine the aspects that will be measured from high school teachers' perceptions of differentiated learning. This research assesses teachers' perceptions regarding differentiated learning, including their views about themselves during differentiated learning such as teachers' general knowledge about differentiated learning, teacher practices related to student readiness, teacher practices related to learning profiles, teacher practices related to the learning environment, teacher practices related to content, teacher practices regarding processes & products, teacher practices regarding assessment and teacher challenges in implementing differentiated learning. Questionnaire respondents can indicate their level of agreement or disagreement with the statements given by selecting the options strongly disagree, disagree, agree, or strongly agree.

3.2. Design Stage

This research aims to develop a questionnaire that evaluates teachers' perceptions of differentiated learning in the Independent Curriculum that has been implemented in schools. This questionnaire covers several 8 aspects which include teachers' general knowledge about differentiated learning, teacher practices related to student readiness, teacher practices related to learning profiles, teacher practices related to learning environments, teacher practices related to content, teacher practices regarding processes & products, teacher practices regarding assessment and teachers' challenges in implementing differentiated learning. All 8 aspects are then explained into 50 statements which include the following:

Table 2 Aspects of teacher perception

Statement Focus	Number of Statement Items
Focus 1: Teachers' General Knowledge about Differentiated Learning	9 items
Focus 2: Teacher Practices related to Student Readiness	5 items
Focus 3: Teacher Practices related to Learning Profiles	6 items
Focus 4: Teacher Practices related to the Learning Environment	7 items
Focus 5: Teacher Practices related to Content	7 items
Focus 6: Teacher Practices regarding Process & Product	5 items
Focus 7: Teacher Practices i regarding Assessment	6 items
Focus 8: Teacher Challenges in Implementing Differentiated Learning	5 items

3.3. Development Stage

3.3.1. Validation by experts

At this stage, the questionnaire that has been designed will be validated by 2 expert validators. By using the questionnaire assessment table, the validator will give a score of 1 (strongly disagree), 2 (disagree), 3 (agree) and 4 (strongly agree). As well as describing suggestions and improvements in the comments column provided.

Table 3 Scores obtained from Validators

No	Descriptor	Validator	
		Validator 1	Validator 2
1	Instructions for filling out the questionnaire are written clearly and are easy to understand	3	4
2	The statements in the questionnaire can measure the teacher's assessment of differentiated learning	3	3
3	Statements in the questionnaire do not have double meaning	3	4
4	The perception questionnaire is easy to fill out	4	4
5	The sentences used in the questionnaire are in accordance with good and correct Indonesian language rules	3	3
Percentage		80%	90%

The following are comments in the form of suggestions and improvements from validators.

Table 4 Comments from validators in validating the instrument of aspects of teacher perception

Validator	Comment	Decision
Validator 1	Focus 2 needs to be revised according to practice and items added. The statement items in each focus must be balanced.	The questionnaire can be used with minor revisions
Validator 2	Avoid repeated words in one sentence statement. Take another look at some of the negatives of data management.	The questionnaire can be used with minor revisions

To ensure product validity, a validation questionnaire sheet is provided after receiving recommendations from the validator and making revisions. The results of the three validators' assessments of the questionnaires that have been created are presented in the table.

Table 5 Percentage of validator scores

Validator	Percentage	Information
Validator 1	80%	Valid
Validator 2	90%	Very valid

4. Conclusion

Based on the development results, it can be concluded that the teacher perception questionnaire towards differentiated learning was declared valid according to the assessment of two validators, with an average percentage of 80% and 90% so that it was declared worthy of development even with slight improvements. This research only reached the development stage because consideration of the time needed to enter the implementation stage and evaluation stage was not sufficient.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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