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Development of Inquiry-Based Learning Methods With Differentiated

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Abstract

This study aims to create and develop a product in the form of a differentiationbased inquiry learning method on the subject of economic problems in the accounting expertise program at SMK. The purpose of differentiation learning is to provide a learning experience that is in accordance with the level of readiness, interests, and individual learning styles of students. This study adopts the Research and Development (RnD) approach that adopts the 4D (Four-D) development procedure. The data used is factual data that has been implemented so far. This study did not use a trial but FGD (Focus Group Discussion) by expert practitioners and academics. In addition, this study was also conducted to determine the activeness of students in differentiation learning in economics learning at SMK. This study was conducted at SMK Kudus Regency, namely SMK N 1 Kudus and SMK PGRI 1 Kudus. The results of this study are in the form of a differentiation-based inquiry learning method, the product is equipped with (1) Differentiation-based inquiry learning method; (2) Differentiation-based inquiry learning method guide; (3) Teaching Guide for differentiation-based inquiry learning economics learning that has been developed has been valid (qualified) to be used as a teaching guide for class XI economics learning in the accounting expertise program at SMK. The characteristics of the method developed are inquiry learning methods based on differentiation of economic problem topics. The products developed are teaching guides and design of *inquiry learning methods* based on differentiation. The results of the FGD showed that an average of 93% was obtained which was categorized as "very feasible" for the final model. The suggestion of this research is to apply the differentiation-based inquiry learning method to the results of this research for teachers to be able to use this method, they must pay attention to the characteristics of each student, class characteristics, facilities, etc. So that the differentiation-based inquiry learning method can be used effectively.

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INTRODUCTION

Education is an essential pillar in improving progress and quality of life in a country. Through quality education, educated human resources can drive progress in various sectors, including economic, social, and cultural. Good learning is effective learning is learning that can encourage students to develop thoughts through experience and search.

This is very important because students in learning are required to develop several skills and attitudes that can help them become effective and enjoyable learners. The use of the right learning method will be able to create effective and enjoyable learning conditions. So that students will get their learning experience, so important is the method, the method must be adjusted to the independent learning curriculum.

Learning the subject matter of economic problems has special characteristics. The characteristics of the subject matter of economic problems in vocational schools can cover several aspects that aim to provide students with understanding and skills related to the world of economics and business. For example, students can understand the basics of economics, production processes, markets, and market prices.

These characteristics require the use of student-centered learning methods, students create their questions, and students can play an active role in learning. This method is the *inquiry learning method* because the inquiry learning method is a learning method that involves students seeking and finding their knowledge, the process of which starts from the orientation, conceptualization, investigation, discussion, and conclusion stages. In contrast to the research conducted by (Tjahjono, 2018) which produced research results student learning activities in Inquiry learning are included in the criteria of being less active, indicated by student activities in orientation, formulating problems, collecting data, and testing hypotheses.

From the perspective of the independent curriculum, every learning led or managed by teachers is expected to provide maximum service to all students. For this reason, every method applied by teachers must provide individual or differentiated services to students. Given that each student has different characteristics.

The learning of the main topic of economic problems in vocational schools in Kudus Regency has not all used the *inquiry learning method*, then the methods that are widely used so far are lecture and discussion methods. Even from the perspective of the independent curriculum, teachers are expected to apply differentiated learning. From the existing data, it can be explained as follows, namely that teachers have not applied the *inquiry learning method* or even differentiated learning.

From several vocational schools in Kudus Regency that were studied by researchers, data shows that not all vocational schools that were sampled have implemented the inquiry learning method even though they have used the independent learning curriculum. 2 vocational schools were samples, namely SMK Negeri 1 Kudus dan SMK PGRI 1 Mejobo Kudus. Of the total 15 RPPs in the last 3 years, as many as 8 RPPs or 53% of RPPs only used the inquiry learning method, the rest used lecture and discussion methods. SMK PGRI 1 Mejobo has implemented the independent curriculum for 2 years, but the application of the *inquiry learning method* has only been implemented this year. In reality, inquiry learning is one of the learning methods needed by students because the inquiry learning method encourages students to be active in their learning, develop critical thinking skills, and discover their knowledge. In line with the opinion of Hanafiah and Sudjana, (2010) stated that the inquiry learning method is a learning method that requires students to be able to discover their knowledge, attitudes, and skills as a form of behavioral change.

Related to the RPP that has been used by teachers, the data we obtained above shows that teachers in the learning process have implemented the *inquiry learning method* but not optimally and do not use differentiation learning because the existing report cards that describe the development of students are not specifically written. This can also be seen from the results of the report card survey conducted by the researcher.

Based on the data obtained by researchers in the field, it shows that the report cards in the sample schools do not describe the portfolio that contains special notes to reflect the evaluation of student attitudes and the report cards also do not present information related to intelligence levels (IQ) or homogeneity so that the teacher's attitude towards students is the same. This condition shows the need to evaluate and update the reporting system in the school so that it can provide a more holistic picture of the achievements and characteristics of students as a whole. Because *inquiry learning* affects process skills, learning achievements, and other aspects of learning that may develop in students.

In line with the learning principles according to Ki Hajar Dewantara learning should involve students actively. Students must be the subject of learning, not just objects that receive information. Ki Hajar Dewantara also views education as a holistic process that involves the development of all aspects of students' lives. This requires the role of teachers who can apply differentiation-based learning. Teachers can use the right learning methods, create a pleasant learning atmosphere, and involve students to play an active role during the learning process.

Differentiated learning is where teachers serve students individually, the learning method used by teachers is inquiry learning where teachers assume that students have the same homogeneity. So teachers have not implemented differentiationbased inquiry learning methods. According to the independent curriculum, every learning should be based on differentiation because, in differentiated learning, teachers are expected to have a method or approach that is carried out for students who have learning styles, backgrounds, levels of understanding, interests, and learning speeds that each student has. The differentiation approach can include various strategies, such as presenting information through various media, giving assignments with different levels of difficulty, or providing choices in how students express their understanding.

The demands of learning in the independent learning curriculum have caused problems in the educational environment, one of which is at SMK Kudus Regency. Based on the findings of researchers in the field, the school has not fully implemented the *inquiry learning method* in the

independent curriculum in economics learning. This results in learning that is less appropriate, learning methods are not flexible with the material being taught and tend to use monotonous lecture and discussion methods.

It requires student-centered learning and students can play an active role in learning. Therefore, teachers need to improve their understanding of the importance of learning with the *inquiry learning method* and differentiation learning that is carried out in learning. Thus, researchers want to develop an inquiry learning method that is interesting for students.

Inquiry learning is one of the best alternatives because the inquiry learning method or inquiry-based learning is a learning approach where students are actively involved in the process of discovery and exploration to understand certain concepts. The inquiry learning method places students as active learning agents, who lead their exploration and develop their understanding of the subject matter. There are several reasons why inquiry learning is considered one of the best alternatives in education: Developing Critical Thinking Skills, Increasing Student Engagement, and Encouraging Collaboration and Communication students.

The approach in the *inquiry learning method* is based on the theory of cognitive development developed by Jean Piaget, emphasizing the importance of students' cognitive development (Lefa, 2014). The *inquiry* learning method is a learning approach based on the principles of constructivism and metacognition. This method emphasizes the active role of students in the learning process, where they take the initiative in asking questions, investigating, gathering information, and building their understanding.

RESEARCH METHODS

The approach used in this study is research and development (*RnD*). The informants involved in this study consisted of SMK N 1 Kudus and SMK PGRI 1 Kudus. Primary and secondary data were collected through interview methods to explore information about the implementation of learning that has been used in SMK and

questionnaires that have been distributed to students and teachers of SMK. The data validity test in this study used the triangulation technique and triangulation source methods, while the descriptive data analysis percentage and qualitative descriptive analysis included Data reduction, Data presentation, and Conclusion drawing.

The research that produced the final product in the form of a teaching guide is a type of R&D (Research and Development) using the 4-D model (Four-D Models), developed by Thiagarajan. This development research was carried out through four stages, namely Define, Design, Develop, and Disseminate.

RESULTS AND DISCUSSION

The inquiry learning method, the strategy used by teachers so that students can be active in the learning process, namely teachers create a learning atmosphere so that students do not feel bored and design various ways for students to achieve the assessments that have been made, even though the backgrounds of students are different. In differentiation learning, there is only one principle, namely centering on students. A more complete design of the teaching guide can be seen in the appendix. In the appendix, the teaching guide consists of several components, namely (1) Learning Achievements, (2) RPP, (3) Assessment Rubric, (4) LKPD, and so on.

Before the implementation of FGD (focus group discussion) in this development research must go through the Delphi technique analysis. The Delphi technique is a technique in the decision-making process involving several experts. However, the experts are not met directly (face to face), and the identity of each expert will be hidden so that each expert does not know the identity of the other experts. This aims to avoid the dominance of other experts and can minimize biased opinions (Marimin, 2004). The Delphi technique is a modification of the brainwriting and survey techniques. In this study, the experts involved in the Delphi technique were 3 practitioners and 2 academics.

The factual model of the differentiationbased inquiry learning method is an approach that combines the concept of inquiry learning with the principles of differentiation learning. Inquiry learning is a learning approach where students are expected to be actively involved in finding and investigating certain questions, problems, or phenomena. Students are encouraged to develop their critical thinking skills, creative thinking, and metacognitive abilities. This is in line with research conducted by Sutiani, Situmorang, & Silalahi (2021), namely the Implementation of an inquiry learning model with science literacy to improve student critical thinking skills. Meanwhile, research conducted (Queensland, 2023) inquirybased learning as a powerful adaptive and metacognitive learning model that provides students with skills that can be easily applied to new problems and contexts.

Differentiated learning is a strategy to meet the diverse learning needs of students in the classroom. Differentiation can be done in various ways, grouping students according to the same background, providing different materials, using different tools, or adjusting tasks and assessments. While the design of the Inquiry Learning Method is based on differentiation This Refers to the process of designing inquiry learning that considers the diverse learning needs of students. And this can be done by providing guidance and providing different resources according to the background of the students. In this development research, the final product is a teaching guide and design of a differentiation-based inquiry learning method. According to research conducted by (Gunawan et al., 2020), it was found that students in the experimental class who used a combination of inquiry learning models and advanced organizers had a significant increase in problem-solving skills than the control class who only used the inquiry learning model. The experimental group has a higher ability to focus on problems, make plans, and implement them to find solutions.

The teaching guide is a learning support tool that presents general information, core components, and attachments related to the subject matter. The design of the *inquiry learning method* based on differentiation is a systematic plan used to design and develop a product, system, or process. This teaching guide and method design

are arranged systematically to help teachers and students during the learning process. Educators today have demands to design interesting teaching guides and make students active in the learning process.

Differentiation-based *inquiry learning* method is that inquiry learning itself encourages students to be actively involved in the learning process by exploring, asking questions, and investigating topics in depth. This helps students become independent and critical learners. *The inquiry learning* method provides flexibility to adapt activities and teaching materials to suit different levels of learner ability, whether through adjusting the material, the pace of learning, or the type of assignments given.

The Inquiry learning method is that this method is designed to make students more active in the learning process and teachers can group students according to the abilities of each student. Teachers can also guide students who have difficulties in learning. By utilizing the differentiation-based inquiry learning method, the learning process becomes more relevant and responsive to the needs of students and increases the effectiveness of learning.

The inquiry learning method aims to produce a finished product in the form of a teaching guide and design of a differentiation-based inquiry learning method that has been revised by academics and practitioners. Validation carried out by academics and practitioners is carried out to determine the shortcomings and weaknesses of the teaching guide. After the teaching guide is validated and commented on by academics and practitioners, the revision stage is carried out. Revisions are made to refine and improve the product. After this stage is completed, there is an FGD.

Although the differentiation-based *inquiry learning* method has many advantages, several weaknesses or challenges may be faced when implementing this method, namely: implementing learning methods Effective *inquiry learning and differentiation requires a great deal of time and effort from teachers. This includes* designing a variety of activities that suit the various needs and interests of learners. *Inquiry learning* methods differentiation-

based based more time-consuming than more traditional learning approaches. And teachers need to undergo training to be able to apply this *inquiry learning method*. Given these weaknesses, teachers and educators can take steps to overcome the challenges that may arise, such as providing adequate training, managing resources well, and adjusting the approach to the needs of learners to ensure the success of the differentiation-based *inquiry learning method*.

Previously, in economics learning in the accounting expertise program in class XI at the sample school vocational school, teachers only used a very simple RPP (Lesson Implementation Plan), lecture methods, and discussions and did not make students actively involved in the learning process. Although the learning method is considered quite helpful in learning economics, the method used has not followed the existing curriculum standards, namely independent learning, and is expected to be able to condition learning to be more enjoyable, meaningful, and effective according to Nurhidayati, S., Zubaidah, S., & Indriwati, SE (2015). The results of the study showed that the learning method used at that time still had weaknesses so students were not very interested in following the learning process. In the results of interviews with economics teachers in the accounting expertise program, shortcomings were found in the learning methods that had been used. Therefore, economics teachers follow the teaching guidelines that have been released by the Ministry of Education and Culture in developing learning methods and teaching guides that will be expanded in economics learning. This is a motivation for researchers to develop teaching guides and learning methods that are by the independent learning curriculum, especially on the subject of economic problems.

The results of the FGD were limited and expanded, there were several inputs provided by academics and practitioners. These inputs include:

The assessment that is still lacking in the material aspect includes differentiated learning that is not yet in the material provided, clear instructions in learning, and simplified assessment models, in preparation for learning the teacher breaks down learning outcomes instead of

formulating learning outcomes, and student-centered learning. Learning that is not equipped with teaching guides can make students feel confused in understanding the material being carried out, during learning there are still some students who hesitate to ask when students are still confused with the information obtained. Students are still embarrassed to ask and explain the information that has been obtained according to (Aryani et al., 2019).

Referring to this, students need to use teaching guides in learning, especially on the subject of economic problems. Teaching guides that are not yet systematic and not by the Ministry of Education and Culture guidelines cause educators to have difficulty in increasing the effectiveness of learning.

The role of educators in compiling teaching guides is to pay attention to the procedures of the components of the teaching guides. Aspects in the use of teaching guides can provide an understanding of the learning of the main topics of economic problems so that they become more effective and useful for students. However, inquiry learning is not the only effective way of teaching practice that is naturally supported by other projects. (Brown, 2025). The results of the study (Yanto et al., 2019) showed that three levels of inquiry were more effective than conventional methods in improving students' scientific reasoning skills in the aspects of analyzing, evaluating, and creating. The quality of the three levels of inquiry can be categorized as very good.

There are several shortcomings in the presentation aspect, namely the improvement of the presentation of case study questions accompanied by a narrative of the main topic of economic problems and not yet covering situations and conditions that are relevant to student's daily lives, such as the latest information in learning to be more realistic, easy to remember, and understandable. Learning presentation indicators are also related to the extent to which students are involved in the learning process, but the teaching materials used have not fully attracted students' interest. The method of presenting case study questions and delivering materials is not interactive and participatory enough to invite students to be

actively involved. In addition, the practice questions given have not encouraged students to practice or play roles actively and improve interpersonal intelligence in the learning process. (Yuniar et al., 2023).

Meanwhile, the differences in the design module, hypothetical module, final model draft, and final model in the differentiation-based *inquiry learning method* are in the aspect of learning preparation in the design module with the following steps: Formulating CP (Learning Achievements), Determining Teaching Materials, Forming Learning Objectives, Preparing Learning Facilities, Individual Differences of Students. And improved into a final model with the following steps: Forming an Initial Assessment, Breaking Down CP, Forming Learning Objectives, Developing Learning Objective Flow, and Individual Differences of Students.

In the aspect of learning implementation that occurs, several improvements occur from the design module, hypothetical module, and final model draft to the final model in differentiation-based inquiry learning method, the steps are: Teaching and Learning Interaction Teachers Help identify problems, assess student there and activities, are experiments. Differentiation Principles: Teachers 1. communicate with student's important material to be learned, 2. Teachers respond to student differences, 3. Teachers and students collaborate in learning, 4. Space, time, and materials are implemented according to the needs of students who have different backgrounds. While in improving the differentiation-based inquiry learning method, the final model steps are: Teaching and learning interactions teachers facilitate problem identification and assess data collection, and there experiments. The principle Differentiation is only one, namely Student-Centered.

The improvements in the last aspect are in the learning evaluation aspect of the design module, hypothetical module, and final model draft to the final model in the differentiation-based *inquiry learning method*, which has the following steps, namely Student Effectiveness, Student Independence, and CP Achievement. Then there

are improvements in the final model, namely the steps are Student Effectiveness, Student Independence, and Learning Assessment Achievement.

The statement above is an improvement in the Differentiation-Based Inquiry Learning method economics learning. Design modules. hypothetical modules, and final model drafts are terms found in various research processes, especially in product development. The design module in the Teaching and Design Guide for the Differentiation-Based Inquiry Learning method is the initial planning step in developing a product that will be implemented in learning. The initial step in designing the Teaching and Design Guide for the Differentiation-Based Inquiry Learning method that will be used in learning is very important, especially in conceptual strategies because it can express creative and innovative ideas that can be realized in development. The design module in the **Teaching** and Design Guide Differentiation-Based Inquiry Learning method plans interesting, relevant, and challenging problems so that students are more enthusiastic about finding solutions to the problems presented. The planning in this design module does not yet have any elements of differentiation learning that are implemented. Therefore, this design module still needs improvement in the next stage.

Referring to the development of teaching guides and design of differentiation-based inquiry learning methods, there are several advantages of the "differentiation-based inquiry learning method " which are shown from the aspects of material, problem presentation specifications, student participation, and the role of teachers. Reviewed from the material aspect, the teaching module has several advantages, including (1) teaching guides are designed with illustrations equipped with videos; (2) there are problem images accompanied by explanations; (3) teaching guides are made in color; (4) there are practice questions and case studies of economic problems that can invite student involvement; and (5) integrating teaching guides with technology.

The inquiry learning method is an approach two important educational combines concepts. Inquiry learning is a teaching method that emphasizes the process of discovery and investigation by students. In this method, students are actively involved in seeking and finding new knowledge through questions, experiments, and exploration. The teacher acts as a facilitator who helps students in this process by providing the necessary guidance and support. Meanwhile, differentiated learning is a teaching strategy that adjusts methods, materials, and assessments according to the needs, interests, and learning styles of individual students. The goal is to ensure that all students can learn effectively, regardless of the differences in abilities and backgrounds of each student.

Characteristics of teaching guides in the development of differentiation-based inquiry learning methods that are developed are, (1) economic teaching guides with the title of teaching guides for business economics subjects, main topics of economic problems based differentiation. The concept of this teaching guide is applied in the differentiation learning process; (2) teaching guides function as a support for the main teaching materials used by educators. This is because educators do not yet have teaching guides that are by the independent learning curriculum, so this teaching guide is an additional source that helps in delivering lesson materials on the main topics of economic problems; (3) teaching guides have a limited scope of material only on topics related to economic problems for grade XI odd semester; The characteristics of teaching guides are designed to provide better and more interesting knowledge and learning experiences for students, with a focus on developing differentiated learning in economics lessons.

The limitation of this method is not done by trial but by FGD. The development of this differentiation-based *inquiry learning method* for economic subjects in accounting expertise programs in vocational schools, if this method is used in other subjects, it must have the same characteristics as the economic problems subchapter.

CONCLUSION

The inquiry learning method that has been implemented so far has shortcomings, many teachers and students have not yet used the inquiry learning method and differentiation learning, and many teachers and students still use lecture and discussion methods. Inquiry learning method Based on the differentiation of development results, the following characteristics apply: This method emphasizes the differences (needs, interests, and different levels of understanding) that each student has, assignments or projects that are tailored to the needs and abilities of students, and the existence of teaching guides that can be used by teachers and students.

The results of the feasibility validation by the validator indicate that the level of feasibility of the differentiation-based inquiry learning method is indicated by the following assessments on the feasibility aspect of the presentation of teaching guides at the point of completeness of the stages (syntax) of learning, systematic stages (syntax) of learning carried out and the suitability between the model images and teaching guides has a percentage of 100% which means very feasible and at the point of readability of the model images from the learning method with a percentage of 20% feasible and 80% very feasible. Furthermore, in the aspect of the feasibility of the contents of the teaching guide at the point of clarity of objectives and learning outcomes to be achieved, the accuracy of time allocation with each stage (syntax) of learning, and the accuracy of teaching materials (assignments, problem topics) discussed in learning has a percentage of 100% which means very feasible and at the point of clarity of the formulation of the Pancasila student profile which is manifested in learning and explanation of each stage (syntax) of learning with a percentage of 20% feasible and 80% very feasible.

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