Development of the Designing Capability of Scientific Approach-Based Learning Tools

Iyus Akhmad Haris  
Economic Education Department  
Universitas Pendidikan Ganesha  
Singaraja, Indonesia  
akhmad.haris@undiksha.ac.id,

Nyoman Sujana  
Economic Education Department  
Universitas Pendidikan Ganesha  
Singaraja, Indonesia  
nyoman.sujana@undiksha.ac.id

Abstract—The purpose of this study is to increase student competence in developing learning tools based on scientific approach through learning strategies and design courses in the Economic Education Study Program at the Faculty of Economics, Universitas Pendidikan Ganesha. This research was conducted in 2019 to achieve this goal, this research was conducted with an approach Research and Development (R&D). The findings of this study include the development of effective learning models and products in the form of social studies, economic and accounting learning tools which later will be useful for the benefit of teaching micro teaching and real PPL in schools that have proven their effectiveness. The results showed that students' understanding of learning tools in particular. Curriculum, syllabus. Through development, student competency has increased significantly and is able to produce scientific approach based lesson plans according to 2013 curriculum requirements.

Keywords: Scientific approach; learning tools

INTRODUCTION

Ideal education is essentially always anticipatory and prepastoristic, which refers to the future and always prepares young people to live in a better, quality and meaningful way. Based on this thinking, every institution and component in the education system at the national macro, regional and micro institutional levels must refer to and support the ideal educational conditions by all parties. Economic Education Study Program Faculty of Economics Universitas Pendidikan Ganesha is one of the institutions with a vision to become a superior study program in the field of economic education with an independent entrepreneurial spirit based on Tri Hita Karana who excelled in Asia in 2040. To realize this vision requires the development of various missions and various excellent programs so that graduates have professional, pedagogical, personal and social competencies that are in accordance with the demands of the times and the challenges of change, especially changes in science and technology that are so rapid that they are able to participate in various changes. This dynamics certainly has implications for the world of education including those held at the Economic Education Study Program of the Faculty of and Culture Regulation Number 64 of 2013 concerning the content standards of primary and secondary education. With the change or displacement of learning traditional nature becomes an innovative learning model in line with the implication that students in the LPTK environment understand and have the ability to design learning in accordance with the demands of the 2013 curriculum, this ability as their preparation for later practical field work (PPL real) or furthermore becoming teacher Economics, Undiksha, where this institution is demanded to constantly reconstruct curriculum structures and various innovative learning methods so that this institution has the title as a superior field of
study. The changes that are taking place in the world of education are gaining attention big is

LITERATURE REVIEW
The term approach to learning is our starting point or perspective on learning, which refers to the occurrence of processes that are still very general in nature, while learning models are planning or patterns used in class or learning in tutorials to determine learning tools. A learning activity in the classroom is called a model if (1) there is a scientific study from the inventor or finally, (2) there are objectives to be achieved, (3) there is a change in specific behavior, and (4) a situation or condition is created so that the process teaching and learning run effectively.

One approach to learning that is developing now is Science. the main objective of this approach is to train students to develop high-level thinking and the learning process is directed at student-centered inductive reasoning. The students / students in the learning process look for and find phenomena, problems, issues and cases so that they can then study, discuss and communicate what they experience. In principle, the scientific approach runs following the steps of scientists in explaining concepts supported by empirical evidence. With such scientific steps students are expected to be creative and innovative who always use the logic of thinking to solve social problems. In the 2013 curriculum based on Science, the social studies learning steps consist of the following steps: In the activity (1) observing, (2) questioning (3) collecting data (4) associating, (5) communication or networking need to give meaning to the good of others. In addition to having this scientific approach stage has the following characteristics: 1) Material based on social context and real life that can be explained logically and reasonably, 2) Explanation of lecturers based on logical and objective logic and refers to advanced theories 3) Lecture material encourages students to feel curious, aspiring, critical to solving social problems in real life 4).The method of encouraging and creating an atmosphere so that students learn actively, creatively, effectively and pleasantly

STUDY PROCESS / LECTURE
Scientific Approach Learning Process, Student competency is obtained Through:
• Observing

• Questioning (asking)
• Experimenting (trying)
• Associating (reasoning)
• Communicating (communicating)

Authentic Assessment
• Portfolio based assessment
• Questions that don't have a single answer.
• Assessment process
• Expressive assessment
• Performance (performance)

RESEARCH METHOD
The study design was made and intended as a direction in the direction of conducting a study. The design used in this study is the design of research and development (Research & Development) in the field of Social Sciences education. The development carried out is the development of social change material developed in the form of handout material based on the 4-P or 3 D models, namely definition, design, development and dissemination (Sanjaya, 2013). The development model used in this study is a descriptive procedural model. Setyosari (2013) states that this model outlines the general steps that must be followed to produce products and / or designs that are guided by the research and development stage according to Borg & Gall. Borg & Gall (2003) outlines 10 steps of research development including (1) research and information gathering, (2) planning, (3) product plan development, (4) initial / limited trials, (5) major product revisions, (6) main trials, (7) revisions to operational products, (8) field trials, (9) revisions to final products, and (10) dissemination and implementation.

RESEARCH RESULTS
Students' Understanding of Learning Tools in the Faculty of Economics Undiksha Economic Education Study Program Students' understanding of a course operational includes the ability of students to explain, describe, formulate, summarize, change, give examples, adapt, explain, summarize and develop related to the material in this case learning material. Learning tools according to 2013 curriculum consists of 1) Student Books 2) Attendance 3) Educational calendar as a reference for the allocation of one year of learning time. 4) Syllabus is part of a variety of learning tools 5) Making Learning implementation plans (RPP)
to plan structured learning 6) Student Work Sheets motivate students more creatively. 7) Learning Media 8) Textbooks for students and teachers 9) Educational evaluation journals 10) Achievement tests 11) Portfolio for evaluation 12) List of class assessment reports. These twelve (12) types of learning tools must be known, understood and become economic student skills in order to become competent teachers. Based on the study guide of the Bachelor Program and Diploma of Ganesha University of Education in 2011, it states that if the mastery level is 0%-39%, then it is 0 or less, 40% to 54%, 1 or less 55%-69% the value is 2 or moderate, 70%-84% the value is 3 or good while of 85%-100% the value is 4 very good.

| No | Aspect                          | KS | K | S | B | BS |
|----|--------------------------------|----|---|---|---|----|
| 1  | Student Book                   | 0  | 5 | 30| 10| 5  |
| 2  | Attendance                     | 0  | 5 | 20| 20| 5  |
| 3  | Educational Calendar           | 0  | 5 | 15| 20| 10 |
| 4  | RPP                            | 5  | 20| 20| 5 | 0  |
| 5  | Student Work Sheet             | 15 | 30| 5 | 0 | 0  |
| 6  | Learning Media                 | 5  | 20| 20| 5 | 0  |
| 7  | Textbooks / Learning           | 10 | 15| 20| 5 | 0  |
| 8  | Resources                      | 10 | 10| 20| 5 | 5  |
| 9  | Evaluation Journal Documents   | 0  | 10| 30| 10| 0  |
| 10 | Achievement Test               | 0  | 10| 35| 5 | 0  |
| 11 | Portfolio Bundle               | 10 | 15| 20| 5 | 0  |
|    | List of reports                |    |   |   |   |    |

From the table above, it appears that students' understanding of learning tools, especially in studying the curriculum, studying the syllabus, making lesson plans, learning media, learning resources and evaluation, in which all four aspects are actually summarized in the structure of the lesson plan Through this research, it is necessary to develop various aspects through design lectures and learning strategies.

4.2. Scientific Model Development

The results of this study are in the form of an RPP product for social studies subjects and other subjects such as economics and accounting that will be invited to junior and senior high schools. The development phase refers to the 4D development model proposed by Thiagarajan which includes: (1) Define, (2) Design, (3) development, and (4) disseminate. But this research only reached the development stage and the stages were as follows: The initial product development plan for implementing learning in accordance with the 2013 curriculum, beginning with the Define stage. The development of RPP especially social studies, economics and accounting at this stage, begins by analyzing Core Competency (IC) and Basic Competency (BC). After analyzing IC and BC with existing indicators, the next step is to develop indicators and learning objectives. After these aspects are determined, it will be continued at the empirical observation stage of learning practice. Literature study is a way of gathering information relating to the study of documents and other materials that support the design of RPP products. Literature studies are carried out to review curriculum content standards, theories and research findings as a basis for drafting IPS, economic and accounting RPP drafts. Activities carried out in the study of literature, among others. (1) analyze the content standards (competency standards and basic competencies) to produce an integrated social studies, economic and accounting RPP (2) analyze the supporting elements needed in order to design an integrated social studies RPP, economics and accounting in accordance with the curriculum, (3) analyze findings from previous research findings that are relevant to this study. These observations, the researchers developed integrated social studies, economic and accounting RPP.

The lesson plans contain at least: (1) KI and KD, (2) learning objectives, (3) learning indicators, (4) learning materials, (5) learning
methods, (6) learning resources, and (7) assessment. At the design stage of the integrated IPS RPP design activities are carried out namely (1) designing the prototype RPP, (2) elaborating KI and KD, (3) approaches, models, methods and learning techniques, (4) learning resources, (6) media learning (7) evaluation design in the CSP, then the final design of the CSP is formed, and product development validation. Through curriculum analysis, syllabus and strategies for developing lesson plans, both theoretically and practically, the development of lesson plans can be done by considering several principles

In preparing the lesson plan there are many things that need to be considered regarding the principles that need to be adhered to in its development. Various principles in developing or compiling the lesson plan are as follows. (1) The lesson plan is compiled as a translation of the curriculum idea and based on the syllabus that has been developed at the national level in the form of a learning process design to be realized in learning, (2) the lesson plan is developed by adjusting what is stated in the syllabus to the conditions in the education unit both early ability students, interests, learning motivation, talents, potential, social abilities, emotions, learning styles, special needs, speed of learning, cultural background, norms, values, and / or environment, (3) encourage active student participation, (4) in accordance with the objectives of the 2013 Curriculum to produce students as independent human beings and not stop learning, the learning process in the RPP is designed centered on students / students to develop motivation, interest, curiosity, creativity, initiative, inspiration, independence, enthusiasm for learning, study skills and study habits, (5) develop a culture of reading and writing, (6) the learning process in the lesson plan is designed to develop a fondness for reading, comprehension of various readings, and expression in various forms of writing, (7) provide feedback and follow-up, (8) the lesson plan contains a program design of giving positive feedback, reinforcement, enrichment, and remedies. Provision of remedial learning is done at any time after a test or exam, the results are analyzed, and the weaknesses of each student can be identified. Learning is given according to students' weaknesses, (9) relevance and integration, (10) RPPs are prepared by paying attention to the interrelationships and cohesiveness between KI and KD, learning materials, learning activities, assessment, and learning resources in one wholeness of learning experiences. RPPs are prepared by accommodating learning, integration across subjects for attitudes and skills, and cultural diversity, (11) applying information and communication technology, and (12) RPPs are prepared by considering the application of information and communication technology in an integrated, systematic and effective manner in accordance with situations and conditions, (13) In a lesson plan must also display the values that exist in the surrounding environment Based on the rational development of the RPP, the RPP contains at least: (1) KI and KD, (2) learning objectives, (3) learning indicators, (4) learning materials, (5) learning methods, (6) learning resources, and (7) evaluation. These components are operationally implemented in the following format; Based on the analysis of needs through library research on the curriculum, syllabus and theories of the development of learning tools as well as empirical analysis of the process of RPP development carried out in the department of economic education, the RPP documents used and the implementation of the RPP can be found that the process of determining IC and BC can be done through developing learning activities / lectures that exist in each indicator that refers to KI and KD what will be achieved in each learning activity / lecture. What kind of behavior or abilities will be observed. Finally, this goal states that the new skill degree must be achieved and measured, that is by what standards these abilities can be assessed.

Learning activities are designed to provide learning experiences that involve mental and physical processes through interactions between students, students and teachers, the environment, and other learning resources in the context of KD achievement. The learning experience in question can be realized through the use of a scientific approach
CONCLUSIONS AND SUGGESTIONS

Based on the analysis and discussion as explained in the previous section, it can be concluded: (1) that students' understanding of learning tools varies, but on average they are still lacking, especially in the 2013 curriculum construction, syllabus and scientific learning model, learning sumner, learning media and authentic assessment. (2) with the lectures on design and learning planning, the understanding of students increases to be good. Next they learned how to make learning designs in the form of lesson plans using various methods such as problem solving, problem based, jigsaw, community science technology and various methods that were considered innovative and scientific.

Constraints faced in the development process, especially in the development of authentic evaluations or assessments where test instruments must be integrated.

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