



Learning Tools Based on Outcome Based Education to Improve Student Learning Outcomes

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ABSTRAK

Saat ini dibutuhkan sumber daya manusia yang berkualitas dan kompeten dalam dunia kerja. Untuk mencapai hal tersebut, kegiatan harus dicapai sedini mungkin, yang dapat dimulai sejak kuliah dengan menerapkan metode pembelajaran Outcome Based Education (OBE). Penelitian ini bertujuan untuk mengembangkan perangkat pembelajaran mata kuliah saintifik berupa rencana pembelajaran semester pendidikan berbasis hasil yang valid, praktis dan efektif untuk meningkatkan hasil belajar mahasiswa. Jenis penelitian ini yaitu penelitian pengembangan dengan menggunakan model 4-D. Subyek penelitian ini adalah dosen program pascasarjana Program Studi PGSD berjumlah 5 orang. Subjek uji coba yaitu 20 mahasiswa PGSD. Metode yang digunakan dalam mengumpulkan data yaitu observasi, wawancara, dan kuesioner. Instrumen yang digunakan dalam mengumpulkan data yaitu lembar kuesioner. Teknik analisis data menggunakan analisis deskriptif kualitatif dan kuantitatif. Hasil penelitian yaitu validitas perangkat pembelajaran berada pada kategori valid dengan nilai validitas RPS 3,52. Kepraktisan perangkat pembelajaran berada pada kategori sangat praktis dengan nilai 3,43. Rata-rata dosen respon sebesar 3,71 dan respon siswa sebesar 3,54. Hasil efektivitas perangkat pembelajaran berada pada kategori efektif, dengan rata-rata skor tes hasil belajar sebesar 79,54 dan ketuntasan sebesar 88,24%. Berdasarkan temuan hasil penelitian disimpulkan bahwa perangkat pembelajaran memenuhi kriteria valid, praktis, dan efektif dalam meningkatkan tes hasil belajar siswa, sehingga dapat dilaksanakan dalam cakupan yang lebih luas.

ABSTRACT

Currently, high quality and competent human resources are needed in the world of work. To achieve this, activities must be achieved as early as possible, which can be started from college by applying the Outcome Based Education (OBE) learning method. This research aims to develop learning tools for scientific courses in the form of valid, practical and effective outcome based education semester learning plans to improve student learning outcomes. The learning device development model used in this research is define, design, and develop, by modifying the 4-D model (Four D model). Learning device validity data was collected by a validation questionnaire. Practicality data was collected through questionnaires on the responses of lecturers and students to learning tools, and questionnaires on the implementation of learning tools. Data analysis was carried out descriptively. Based on the research results obtained: (1) the validity of learning devices is in the valid category with a validity value of RPS 3.52, (2) the practicality of learning devices is in the very practical category with value of 3.43, the average lecturer response is 3.71 and student response is 3.54, (3) the effectiveness of learning tools is in the effective category, with an average learning achievement test score of 79.54 and completeness of 88.24%. Based on the findings of the research results, it was concluded that learning tools met the criteria of being valid, practical, and effective in improving student learning outcomes tests, so that they could be implemented in a wider scope.

1. INTRODUCTION

Rapid changes in the world of work as a result of globalization and revolutions in the fields of information technology and science have required anticipation and evaluation of the competencies needed by the world of work (Nicolaou et al., 2019; Osman et al., 2009). Evaluation is also important so that the world of higher education is not separated and distant from the real world of work in society (Potter & Thai, 2019; Yuliana et al., 2022). There is a dynamic relationship between universities, especially related to the

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gap between higher education outcomes and competency demands in the world of work. Some of the important shifts that have occurred include an increase in educated unemployment, both open and hidden, as a result of higher education, changes in global socio-economic and political structures that affect the world job market and the rapid development of science and technology, causing various fundamental changes to occur in terms of qualifications, competencies and requirements for entering the world of work (Prosekov et al., 2020; Yüksel & Kavanoz, 2011). The existence of human resource competency to get a decent job means that human research with high quality and competence in their field is needed (Melliana et al., 2018; Tripathi & Agrawal, 2014). To get this, it must be achieved from activities as early as possible which can be started from college by applying the Outcome Based Education (OBE) learning method. Outcome-Based Education is a curriculum that focuses on learning outcomes which are expected to be able to fulfill aspects of knowledge, skills and attitudes according to social, economic and academic cultural conditions (Astra et al., 2015; Kaliannan & Chandran, 2012; Lotter et al., 2018). The learning implemented in most universities in Indonesia generally uses the teacher-centered (input-oriented) method. This learning method puts pressure on the teaching and learning process (Radovanović et al., 2015; Taufan, 2022). If the educator (lecturer) has delivered the course well then this is considered sufficient. Outcomes depend on the results of the teaching and learning process. This learning model is relatively dependent on the teaching staff. Student achievement is measured after the teaching and learning process is complete.

Whether the results achieved by students are good or not depends on the teaching and learning process carried out. One of the weaknesses of this method is that the learning outcomes that have been determined in the course cannot be fully achieved (Lestari & Sari, 2021; Mustaming et al., 2015). The traditional way of designing modules and programs is to start from the course content. Teachers decide the content they want to teach, plan how to teach this content and then assess the content. This type of approach focuses on teacher input and assessment in terms of how well students absorb the material being taught (Farihah et al., 2021; Nopriana et al., 2023). Course description refers primarily to the course content that will be covered in the lecture. This teaching approach is called a teacher-centered approach (Fatimah & Santiana, 2017; Yuliana et al., 2022). The use of appropriate methods is very necessary to support the outcomes achieved by students. So an appropriate assessment system is also needed in using this method. The Outcome-Based Education system is a learning method that focuses on what students should do (Damit et al., 2021; Nouraey et al., 2020; Pahlevi et al., 2018). In outcome-based education, learning outcomes or outcomes are identified first, then learning and assessment methods are planned according to the outcomes. This is different from traditional learning methods where the topic taught is determined by the lecturer and then from this topic the output will be identified (Frolova & Rogach, 2021; Lee, 2022).

These massive system adjustments and changes also affect the learning system within the STAHN Mpu Kuturan Postgraduate Program, PGSD Study Program. Following up on the mandate from the Minister of Education in developing the curriculum to implement the *Merdeka* campus program. The *Merdeka* campus program requires universities to be able to implement an output-based curriculum or outcome-based education. In its implementation, a semester learning design is needed that supports student-centered learning or learning that focuses on students through case-based learning and projects based Learning (PJBL) (Capraro et al., 2013; Kavlu, 2016). Base on those reason the author discovered the issue that the RPS used in the postgraduate program of the PGSD study program needs to be updated so that it can be adapted to the case and project-based learning model, especially in core scientific subjects which include elementary mathematics learning, elementary science learning, elementary civics learning, social studies learning, elementary school, and elementary school Indonesian language learning (Amaliyah, 2021; Kawuryan et al., 2016).

Some analyzes of the impact of this problem are the non-optimal implementation of the outcome-based curriculum (OBE) in case and project-based learning (Damit et al., 2021; Tungpalan & Antalan, 2021). As a result, the implementation of the independent campus program did not run well and the mandate to update the curriculum did not run optimally. Apart from that, this problem also triggers a lack of skills in facing the era of disruption. Moreover, the world will welcome the era of super smart society (society 5.0) which demands 21st century capabilities including 6 basic literacy skills (numeracy literacy, scientific literacy, information literacy, financial literacy, cultural literacy and citizenship) (Carayannis et al., 2022; Fatimah & Santiana, 2017). Not only basic literacy but also other competencies, namely being able to think critically, reason, be creative, communicate, collaborate and have problem solving abilities. Case and project-based learning is the right medium to facilitate students' ability to solve problems independently and innovatively (Isro et al., 2021; Pratiwi et al., 2023).

Outcome-based education integrates a number of processes including curriculum design, assessment and teaching and learning methods that focus on what students can do. Outcome-based education emphasizes that learning outcomes (CP) can be met from the aspects of knowledge, skills and attitudes according to social, economic and academic cultural conditions (Hussin et al., 2018; Pahlevi et al.,

2018). The abilities of students and CPs are accommodated by OBE through several strategic steps and academic equipment, including: coursework, final assignments, presentations, tests and student portfolios.

Referring to the urgency of overcoming the issues resulting from the impacts above, the author's position is very central in updating the RPS for the core scientific subjects of the PGSD study program in accordance with the output-based curriculum (OBE). The author, as a lecturer who is based in the PGSD Masters program, hopes that this RPS update will become a sustainable program to be implemented in all courses in the PGSD Postgraduate Program. Based on the background explanation, the aim of this development research is to analyze the validity, practicality and effectiveness of Outcome-based education-based PGSD scientific learning tools to improve student learning outcomes in the PGSD STAHN Mpu Kuturan Singaraja post graduate study program.

2. METHOD

The type of research carried out is development research (Research and Development). The product referred to in this research is a core PGSD scientific learning tool based on outcome based education that is valid, practical and effective so that it can improve the learning outcomes of postgraduate students in the PGSD STAHN Mpu Kuturan Singaraja study program. The learning device development model used in this research is define, design, and develop, by modifying the 4-D model (Four D model) (Thiagarajan, 1974). This research was only carried out in the third stage namely the develop stage, due to time constraints. The learning tools developed in this research are the syllabus and RPS based on Outcome Based Education, while the textbooks in this research will be used as research outputs. The subjects of this research were lecturers in the PGSD Study Program postgraduate program. Consisting of 5 people who validate and observe the implementation of the device, and are able to provide suggestions, input and comments to be used as material for revisions to the device being developed. 20 PGSD students from the PGSD Study Program played a role in obtaining data about the practicality and effectiveness of the learning tools that have been developed. Meanwhile, the research object is the development of elementary mathematics learning, elementary science learning, elementary civics learning, elementary Indonesian language learning and elementary social studies learning with an outcome based education curriculum design.

Validation of learning tools concerns validation of content, constructs and language. Judging from the content of the learning tools being developed, they are said to be valid if they are based on strong theoretical rationale, or a tool is said to be valid if its material components. From a construct perspective, the tool being developed is said to be valid if there is a consistent relationship between the various components in the learning model applied. To see validity, a validation sheet is used. In the validation sheet, the validator's opinion is then categorized into four, namely: very valid (score 4), valid (score 3), invalid (score 2), and very invalid (score 1). The aspects assessed in outcome-based education oriented learning tools can be seen in Table 1.

Table 1. Aspects of Validity Assessment of Outcome-Based Education Oriented Learning Tools

I	Formulation of Learning Objectives
	<ol style="list-style-type: none"> 1. Clarity of Graduate Learning Achievements and Course Learning Achievements. 2. Conformity of Graduate Learning Achievements and Course Learning Achievements with learning objectives. 3. The accuracy of the translation of graduate learning outcomes into course learning outcomes. 4. Suitability of course learning outcomes with learning objectives. 5. Suitability of course learning outcomes with the student's level of development.
II	Contents Presented
	<ol style="list-style-type: none"> 1. Systematics of preparing the RPS 2. Organizing teaching materials related to course learning outcomes. 3. Suitability of the sequence of learning activities 4. Conformity of descriptions of student and lecturer activities for each learning stage with learning activities 5. Clarity of learning scenarios (stages of learning activities: beginning, main, closing) 6. Selection of sources, media, learning tools/materials. 7. Completeness of evaluation instruments (questions, keys, scoring guidelines).
III	Language
	<ol style="list-style-type: none"> 1. Use of language in accordance with EYD. 2. The language used is communicative

3. Simplicity of sentence structure	
IV	Time
1. Suitability of the time allocation used.	
2. Time details for each learning stage.	

The validity of learning tools is determined by converting the average total score into a qualitative value using criteria as in [Table 2](#).

Table 2. Learning Tools Validity Criteria

Score	Interpretation
$3.5 \leq R_{vi} < 4.0$	Very valid
$2.5 \leq R_{vi} < 3.5$	Valid
$1.5 \leq R_{vi} < 2.5$	Invalid
$1.0 \leq R_{vi} < 1.5$	Very invalid

The practicality of the learning tools developed is measured by the implementation of the learning tools in the classroom. Data regarding the practicality of the learning tools developed was obtained from observations, student response questionnaires, and teacher response questionnaires to the learning tools used. The data obtained was then analyzed to see the practical value of the learning tools developed. The average score for each observation is determined by adding up the scores for each item on the observation sheet for the implementation of learning tools and then determining the average. To find the average, the response scores for each teacher are added up and then the average is found, and similarly, to find the average response scores for each student, the scores are added up and then the average is found, then the average score obtained is converted based on the criteria as in [Table 3](#).

Table 3. Practicality Criteria for Learning Tools

Score	Interpretation
$3.5 \leq S_r < 4.0$	Very Practical
$2.5 \leq S_r < 3.5$	Practical
$1.5 \leq S_r < 2.5$	Not Practical
$1.0 \leq S_r < 1.5$	Very Impractical

In this research, the device developed can be said to have practical value if the minimum average score reaches the practical category or the minimum average score falls into the interval $2.5 \leq S_r < 3.5$. Then the effectiveness of the learning tools can be seen from the scores for the PGSD core scientific subjects.

3. RESULT AND DISCUSSION

Result

Based on the results of the validity test, it was found that the outcome-based education learning tools met the valid criteria. The validity score for the learning device is 3.52. Overall, the validity of the device that has been successfully developed is categorized as valid and suitable for use. The results of research on the validity of learning tools are in the valid and suitable category for use. The practicality of learning tools can be determined from: 1) the implementation of learning tools, 2) the teacher's response to learning tools, and 3) students' responses to learning tools, especially student books. The result of practicality test is show in [Table 4](#).

Table 4. The Result of Practicality Test

Practicality test	Score	Interpretation
Implementation of Learning Tools	3.43	Practical Criteria
Teacher's Response to Learning Tools	3.71	Very Practical Criteria
Students' Responses to Learning Tools	3.54	Very Practical Criteria

The learning tools developed are said to be practical if observations of the implementation of learning obtain a minimum score of 2.5, which is included in the good or practical category. Base on [Table 3](#) the results of research on the implementation of learning tools obtained a score of 3.43 with practical criteria, the teacher's response to learning tools obtained a score of 3.71 with very practical criteria, and

students' responses to student books obtained a score of 3.54 with very practical criteria. This shows that the learning tools developed have met practical requirements. The practicality of the device is caused by teachers and students easily utilizing the devices developed and being able to use them according to the time allotment that has been determined, as well as the tools, materials and media used in learning are easy to obtain and easy to use, so that students and teachers give a positive response to learning. which has been done. Judging from the implementation of the learning tools at the first meeting, the average implementation score was 3.17, this means that the learning tools at the first meeting were practically implemented, although it is considered practical, it cannot be said to be optimal, because there were several obstacles experienced during the learning activities at the first meeting. by using the learning tools developed. This obstacle is that students are not used to carrying out the activities required in the student book. This can be seen when students are asked to carry out practical activities in the student book, most students show a quiet attitude and are less active because they think the activity is difficult and are afraid to start without reading and studying it first.

Starting from the obstacles faced at the first meeting, the researcher designed handling of some of the obstacles faced. The treatment plan in question is as follows. 1.) Students are asked to look again at the activity description in the student book. This is done so that students do not experience confusion when carrying out the activities that will be carried out so that work procedures become more structured. 2.) The teacher looks again at the Group Investigation learning steps as designed in the RPS. Growing commitment that this research was conducted to improve the quality of classroom learning which is expected to increase students' scientific literacy. 3.) Provide opportunities for students to discuss with friends in their group. Also realizing that the teacher's position is as a facilitator in terms of directing students to arrive at an understanding of the concepts being studied, not merely as a provider of information to students who can later change the teaching paradigm to teaching students. 4.) Provide intensive guidance by visiting each group member and motivating students to work together with their group friends. 5.) Give students the opportunity to explain the results of their group work in front of the class and ask for clarification on the discussion and answers to the questions they created. Apart from that, it also gives other groups the opportunity to respond to the results of the presenting group so that it is hoped that cross-communication will occur to solve the problems faced.

The implementation of learning at the second meeting was adjusted to reflect the obstacles experienced at the first meeting and the improvement efforts made. Based on the handling of the improvements that are designed, they can have a positive impact on the implementation of learning at the second meeting. This can be shown by the increase in the average score for the implementation of learning tools at the second meeting. The average implementation score at the second meeting was 3.24. This means that practical learning tools are carried out by the teacher. Quantitatively, the average implementation score at the second meeting increased by 0.07 compared to the first meeting.

Based on the reflection results of the second meeting, there were several positive things that were seen as a consequence of handling the obstacles that existed in implementing the learning at the first meeting. The positive things that can be seen are 1) Students are used to carrying out activities as required in the student book. This is shown by the attitude of students who are starting to pay attention to student books, are willing to do the activities that have been presented, and the results of practicum reports are increasing. 2) Students have started discussing with their group friends to discuss the practicum results obtained. This is shown by the students' attitude which starts to become serious when discussing. Apart from that, it was also seen that several groups had started to ask their friends or teachers if there were activities they did not understand, so that communication in learning took place effectively. 3.) In presentation activities, the teacher seems to have started to give the presenting group the opportunity to explain the results of their group's work in front of the class. Other groups have also begun to be given the opportunity by the teacher to respond to the work of the presenting group.

The implementation of learning at the third meeting was in accordance with the reflection of the activities carried out at the second meeting as well as the efforts made to overcome the obstacles faced. In general, the implementation of the third meeting had a positive impact after improvements were made. This is indicated by an increase in the average implementation score of 3.56 at the third meeting. This means that the learning tools developed are very practical for teachers to use. Quantitatively, the average implementation score at the third meeting increased by 0.32 from the second meeting. The fourth meeting was carried out taking into account the reflections at the third meeting. At the fourth meeting, learning was going very well, students were used to carrying out activities according to what was required in the student book, students were used to actively discussing with their friends in groups, teachers were used to carrying out learning according to the RPS. This can be seen from the results of the average implementation score for the learning tools at the fourth meeting of 3.74, this means that the learning tools are very practical for

teachers to implement. Quantitatively, the average implementation score for the fourth meeting increased by 0.18 from the third meeting.

Based on the description above, it can be concluded that the semester learning tools developed have met the practical requirements for learning tools. This means that the learning tools developed can be used well by teachers and students. The effectiveness of learning tools is determined by providing a learning outcomes test consisting of 5 essay questions, performance assessment and attitude assessment. The research results showed that the average student learning outcome score was 79.54 and completeness was 88.24%. The results of the analysis show that there is a significant difference between the pretest and posttest scores on student learning outcomes.

Discussion

Preparing and developing learning tools should be a lecturer's first step in designing learning. Without clear and systematic learning tools, the learning process will not be effective. In line with this, the development of learning tools based on outcome based education is very suitable to be developed, seen from the characteristics of STAHN Mpu Kuturan Singaraja. The learning tool developed is a semester learning plan. This learning tool was developed through several stages, namely the first stage was definition, the second stage was design, the third stage was development. Development is only carried out until the develop stage. Learning devices that have been assessed, corrected, given input and suggestions by the validators then collect data on the practicality and effectiveness of the product (Ahmad, 2020; Alenezi, 2020; Aprilliyah, 2014). The results of this research are RPS based on outcome-based education in core scientific subjects that are valid, practical and effective.

Learning tools that are valid and suitable for use are influenced by several factors, namely as follows. First, there is conformity of the learning device components with the instrument indicators of the validity of the learning device which have been declared fit for use by the validator, so that an average learning device validity score is obtained in the valid category (Aprilliyah, 2014; Dam et al., 2019). Second, the learning tools developed are in accordance with aspects of validity measurement, namely content validity and construct validity. Learning tools meet content validity, meaning that their development has been based on the material content of the theories used as a reference in the formulation or compilation. RPS is based on outcome based education which has been prepared according to the characteristics of Physics learning with the Group Investigation learning model (Hwang et al., 2022; Papadakis et al., 2020). Student books are equipped with worksheets that can train students to construct their own knowledge, so that students become active in finding out and processing the information obtained so that students better understand the material being taught (Fatimah & Santiana, 2017; Serevina & Heluth, 2022). Likewise, the learning steps designed in the RPP can help teachers carry out learning and direct students to be able to understand the concepts being studied so that they have an impact on increasing students' scientific literacy. Regularity in presenting material from easy to difficult levels can also cause students' thinking patterns to become more focused.

This is in line with research conducted by previous research that the average result of assessing the implementation of learning tools was 3.84 in the practical category, this means that the learning tools developed have met the level of practicality and the average score of student responses to student books was 4.14, based on practicality criteria, it can be said that the learning tools developed are very practical criteria (Priyanto et al., 2017). Furthermore, other research conducted found that from the results of student responses to all aspects of the student response questionnaire sheet, it can be concluded that the development of learning tools using the GI type cooperative learning model with the course review strategy is categorized as good with an average rating of 85% (Suitriani et al., 2016). This shows that the development of learning tools using the GI type cooperative learning model with the course review strategy is suitable for use in the teaching and learning process and can be used as a reference for the teaching and learning process.

This research has the potential to make a positive contribution to improving student learning outcomes. By developing Outcome Based Education (OBE) based learning tools, it is hoped that students can achieve better learning outcomes in accordance with the desired competencies. Through an OBE approach, this research can help integrate learning into real-life contexts and job market needs, preparing students with relevant skills. However, this study may have limitations in generalizing its results because it can be greatly influenced by the institutional context in which the research was conducted. What works at one institution is not always relevant for another institution. Apart from that, there are external factors such as the learning environment, family support, and psychological factors that can influence student learning outcomes, which may not be fully controlled in this research.

4. CONCLUSION

The results of this research are RPS based on outcome-based education in core scientific subjects that are valid, practical and effective. Based on the results of the validity test, it was found that the outcome-based education learning tools met the valid criteria. The validity of the device that has been successfully developed is categorized as valid and suitable for use. The results of research on the validity of learning tools are in the valid and suitable category for use. Learning tools developed have met the practical requirements for learning. The results of the analysis show that there is a significant difference between the pretest and posttest scores on student learning outcomes.

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