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Research Article

Needs Analysis to Develop Teaching Material Based on Project-based Learning to Support Teaching Factory

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Abstract.
This research is the initial phase of developing English teaching material using project-based learning approach. The teaching material which is designed by using project-based learning approach can create teaching factory learning atmospheres. The students can achieve learning output based on learning profile curriculum demand. This study used the recursive and reflective (R2D2) method. It had 3 stages: define, design and development, and dissemination. The study focused on the define phase. This research used a descriptive qualitative design. The participants in the study were eleventh grade vocational High School teachers in Banyuwangi. The data collecting technique in this study were structured interviews and document analysis. The research instruments were an interview guide and need analysis identification sheet. The data were analyzed and described qualitatively. The research findings showed that the existing English course module did not represent the project-based learning approach to support teaching factory atmosphere. The English teachers should provide relevant teaching material. It was contextual-based real working life challenge. The researcher analyzed teaching material and presented the result of need analysis identification. The researcher also investigated the teacher documents and module to measure and to recognize students attitude response toward the book material.

Keywords: English teaching material, project-based learning, teaching factory

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1. Introduction

The global challenge of Industrial Revolution 4.0 in the 21st century is an era of rapid digital disruption that creates dynamic changes to new life and increasingly fierce global competition. The curriculum for vocational high schools in Indonesia should be able to meet the global challenges of the fourth industrial revolution. They require a comprehensive set of requirements. The development of graduates' competencies

demands an adaptive curriculum and industry collaboration (match and link). By developing a curriculum in collaboration with DUDI, vocational high schools respond to the requirements of the business world and industry.

The development of vocational high school education is currently changing from a local labor market orientation to an international labor market so that it is necessary to have English teaching materials. They could help to improve student skills to compete in the international labor market. English teaching material should be oriented to project-based learning that able to support teaching factories. However, the English teaching materials used for vocational schools are still general. They closely related to graduate qualifications are still lacking. The English teaching materials are designed to be project-based learning therefore, students can learn independently and actively develop their English skills. The project based learning materials can create a learning environment like a teaching factory.

Teaching materials encompass a wide range of resources employed to support learners in their learning activities. These materials serve to facilitate the implementation of teaching and learning activities. Instructional resources encompass a variety of mediums, including textbooks, notebooks, compact dictionaries, supplementary materials, textual supplements, audio recordings, visual aids such as posters, picture cards, slides, projector transparencies, films, and videos [1].

Teaching materials are intended to increase students' interest and motivation in learning through attractive message design (e.g., writing style, image layout) and active participation through practical activities [2]. Textbooks are a component of instructional materials [3]. Even though technological advances have created other learning resources, such as the Internet, audio CDs, interactive CDs, movies / videos, etc., textbooks continue to play an essential role in education today. Textbooks are standard books that serve as references for students and students in the process of learning, containing credible source materials organized, systematically, and in depth.

The quality of textbooks depends on their relevance to the requirements of students [4]. The course book accommodates more functions for the students. For instance, it allows students to learn at their own pace, conduct in-depth study for revision and reflection, or record essential information for other purposes.

Project-based learning (PjBL) aims to develop students skills in a knowledge-based and technologically advanced environment, to prepare them to confront the challenges of the modern world, and to enable them to solve complex problems that require basic

skills. Project-based learning is a student-centered learning strategy that develops skills and content through the use of logical tasks that incorporate the skills and knowledge to be acquired, have a connection to the students, and provide a real-world learning context [5]. Four dimensions comprise the characteristics of project-based learning: a) content that contains original main ideas; b) conditions that prioritize learner autonomy; c) collaborative group investigations; and d) outcomes of actual products.

Teaching Factory (TEFA) is learning that presents an atmosphere that is close to the real industrial environment and activities through collaboration with industry with product-based learning to produce graduates who are competent, have work culture character and entrepreneurial spirit through production activities in the form of goods or services that have standard planning, procedures and industrial quality control and are marketable to consumers / society [6]. The concept of TEFA is to provide real experience in the physical environment of the product value chain system where students can do, evaluate, and reflect on the results of their own work.

Vocational education emphasizes teaching factory learning. It is designed of learning that takes place at the training site, not in the classroom, and the training is production-oriented as in real industry [7]. The implementation of this model fully integrates learning and working and no longer separates teaching from theory and practice. The results of this study are expected to be a guide for the principal of vocational high school and related stakeholders to develop project-based learning teaching materials that can contribute to improve the quality of teaching factory learning. This is in accordance with the Research Master Plan (RIP) of Banyuwangi State Polytechnic in the focus areas of Social, Humanities, Education, the theme of healthy, smart, brave, and highly competitive human resources.

1.1. Statement of the problem

The formulation of the problems to be studied from this research is:

What teaching materials in English subjects are needed by teachers and students based on project-based learning that can support teaching factory learning?

1.2. Scope and limitation

Research limitations focus on (1) identifying the needs of Vocational High school of Rogojampi students for teaching materials that are relevant to teaching factory learning.

(2) Development of teaching material materials covering the stages, define, design development, and dissemination. The results of data collection will be the basis for developing teaching materials at vocational high school of Rogojampi with the R2D2 (Recursive Reflective Design & Development) analysis technique, however this study is limited in need analysis of English material to support teaching factory learning. It is in define stages.

1.3. Research objectives

The objectives of this research are:

To identify and analyze students' needs for project-based learning materials in teaching factory.

To compile and determine teaching materials based on project-based learning.

1.4. Benefits of research

The results of this research are expected to provide benefits

Development of academic knowledge related to teaching factory learning using a project-based learning approach.

Providing input for the implementation of teaching factory learning at vocational high school of Rogojampi.

2. Research Method

Development research is defined as a systematic study to design, develop and evaluate programs, processes and learning outcomes that must meet internal consistency and effectiveness criteria [8]. From this definition, five domains are mentioned, they are design, development, utilization, management, and assessment. Researchers can focus their research on one of the domains. They draw theoretical and practical benefits from the other domains. Teaching materials need to be developed and organized so that learning is not far from the objectives/competencies to be achieved and is expected to be effective and efficient.

This development model has 2 main components, they are, (1) a view of learning that refers to constructivist learning. This learning views students as someone who has

the power to develop independently. Students do their own thinking based on their background knowledge that they already have. The individual can connect the old with the new so that they will get something new, continuing to develop as long as the individual thinking process continues. (2) The design of teaching material development using learning design R2D2 model with the structure of define, design and development, and dissemination. The R2D2 model is a constructive learning design procedure that emphasizes creativity in the learning process itself. In this case, R2D2 which will be developed is a model structure or procedure for designing, developing and producing teaching materials in the form of textbooks. This research focus on define stage.

The procedure for developing teaching materials is as follows:

2.1. The define stage

The define stage involves first forming a team (consisting of representatives of the subject teacher, students and developers). The team is tasked with progressive problem solving based on the findings during the learning process. The team was able to develop the praxis through the team members who worked by making observations. In the final stage, the developer identifies the weaknesses of the developed textbook, formulates learning objectives, and conducts a feasibility study (implementable, and effective and efficient).

2.2. Design and development stage

This stage is divided into 4 components, namely:

Selection of the development site. In this phase, the developer selects the setting where it will be tested, which consists of material content experts, learning experts, and textbook design experts from outside the setting.

Media selection. In this stage, the media in question is the media used by the developer in implementing the material contained in the textbook. Developers search the internet and process according to the material to be given. This media is in the form of images that are in accordance with the material to be taught.

Product design and development. Developers design and develop teaching material products in the form of textbooks. The design of textbooks was suitable with project-based learning model. The steps in developing the textbook reflected on the steps in the project-based learning strategy. Thus, from the design and development of teaching

materials, it can produce teaching books in which there is a syllabus, content of learning materials, evaluation sheets/tasks and assessment sheets.

Evaluation procedure. In this stage, the developer conducts participatory and contextual assessments (through observation sheets of observers, and learners), and contextual formative evaluation. The validation sheets designed based on products produced based on expert review (material content experts, learning experts, and textbook design experts). The validation sheet is in the form of assessed aspects, rating scales and responses and suggestions from experts on material content, learning, tests and design of textbooks and media. After the validation results are obtained from the validators, the textbooks developed must first be tested in small groups.

2.3. Dissemination stage

In this stage, a report on the results of the development activities was prepared by holding an internal workshop in the internal circle of the school and attended by experts in the field of English studies, especially subject teachers. And the results of the final product, namely textbooks, can be published among learners, especially among internal schools, and generally external schools with ISBN standards.

3. Results

3.1. Define stage

The findings of the preliminary phase of the study was the define stage. It emerged from structured interviews and observations of instructional materials used by English teachers. The participants in this study consisted of four English teachers, one curriculum staff member, the head of the culinary department, and the head of the hospitality department. Focus group discussion technique was used to demonstrate a collaborative effort among teachers, educational development professionals, and students to collectively engage in the process of identifying the initial teaching material requirements through a project-based approach in interviews with instructors. All English teachers have implemented the independent curriculum.

Only one teacher had utilized a project-based learning model to teach English courses in the classroom. During the classroom learning process, teachers had provided students with learning materials in the way of printed modules and power point media. The

use of printed instructional materials could enhance students' abilities and accelerate their mastery of the material. However, the teacher's statement regarding the provided student handbook remained uninteresting and could not be used optimally because students continued to struggle with its comprehension. In addition, the information in the student handbook was still not contextualized. It did not reflect to the stages of project-based learning that could generate a teaching factory learning atmosphere. This proves that instructors should provide new project-based instructional materials in order to engage students in learning.

During the implementation of the project-based learning model, educators and the research team tried to provide educational resources for students in the eleventh grade, specifically in phase F class eleventh. These materials were developed through a collaborative effort involving teachers, the research team, and industry partners. The teaching resources for project-based instruction were organized in a manner that matches more closely with the industrial environment, with the intention of integrating them into the school's teaching factory. The Figure 1 presented below displays the outcomes of the analysis pertaining to the learning resources utilized by teachers.

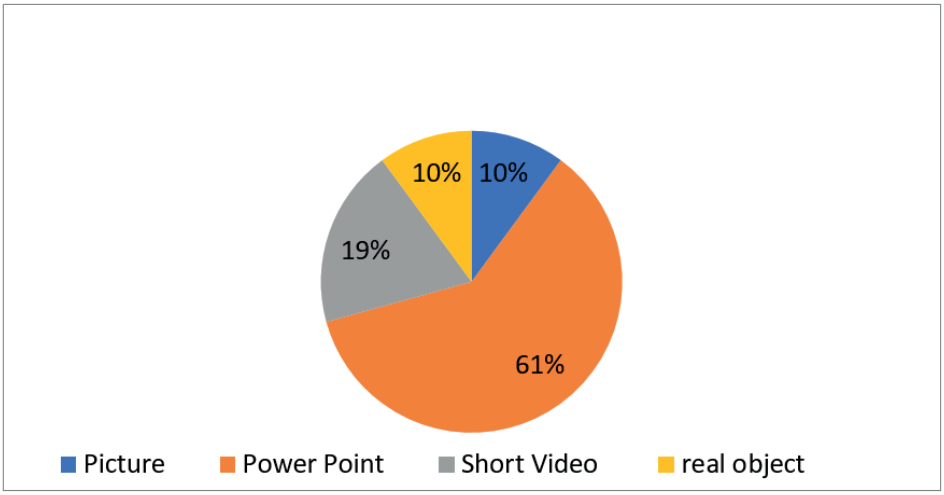

Figure 1: The use of teaching media.

English teacher often used power point as their instructional tool. It was essential that students have access to a supplementary textbook in order to enhance their comprehension of the subject matter presented by the instructor via power point. When students engage with the teacher's presentation on a power point, they simultaneously focus on the printed textbooks, which have not yet addressed the practical challenges of teaching in a real-world setting. Consequently, students frequently experience confusion regarding the teacher's explanation and the teaching material, as there is a

lack of integration between their actual learning experiences and the disparities in the textbooks they possess.

The majority of students possess learning resources, although these resources have not facilitated project-based learning or the acquisition of real-world experience to encourage the school's primary product of teaching factory. Therefore, it is recommended to develop instructional resources at vocational high school of Rogojampi that facilitate student learning. The efficacy of these instructional resources lied in their ability to facilitate student learning of the school's primary teaching factory product. This was achieved through the implementation of textbooks that employ a project-based approach, supplemented by contextualized materials. Therefore, it could be inferred that the development of project-based instructional materials is essential in facilitating students' comprehension of the curriculum content, particularly in fostering an authentic learning environment inside the educational institution.

4. Discussions

Further analysis showed that students need learning media and printed book learning resources as student learning materials so that students can follow the material presented by the teacher through power point. They could study the teaching materials independently both outside the classroom and inside the classroom. English skills should be combined with other skills. The integrated skills could overcome problems in project-based learning models. English for special purposes (ESP) was designed to facilitate students based on their needs for English and each student's desire to learn the language themselves. Therefore, the provided content would also emphasize project-based learning for work readiness.

This needs analysis showed that both students have the same opinion about integrated skills especially productive skills. Productive skills are the most important to prepare them for work. Speaking and writing skills are the most important of the four English language skills [8]. Writing and speaking, as well as vocabulary skills are necessary for their future careers [9].

Ninety percent of students were pleased to learn using learning media, eighty percent required learning resources that were simpler to comprehend, and eighty-five percent desired textbooks that were more practical and relevant to the teacher's power points.

Students' English textbooks did not fulfill their needs because the material was too general and had not been designed to meet the requirements of their work.

These teaching materials should be updated to become attractive teaching materials by incorporating various supporting learning media, such as images, videos, and project-based evaluation of learning experiences [10]. The current learning of English has not met the academic needs of students, so both teachers and students need teaching materials based on the PjBL learning model that integrates the concept of school superior products with a teaching factory approach to help make projects. Project-based print teaching materials can be facilitated by using various learning media, such as moving animations, videos, and images. This is in line with the results of previous research Hidayat, which found that teaching materials that provide real experiences in learning can increase student interest in learning [11]. Students' learning outcomes and achievements will have a better effect if the teacher has carried out project-based learning in the correct stages.

The results of this study have been able to give the research team an idea of what students need which will be useful when they create assignment content that meets the needs of students and the world of work. Industry partners stated that vocational students need English-specific modules that are closely related to their study programs.

5. Conclusion

Based on the results, the researchers' team concluded that the English teaching materials at vocational high school of Rogojampi need to be improved to be more in line with the English language needs of the hospitality industry. The teaching materials prepared are equipped with all skills in the aspects of writing, speaking, reading, listening, vocabulary, grammar, actively in the form of project assignments that integrate all aspects of skills to support productive skills. Because there is a significant difference between the availability of teaching materials and the level of need for learning approaches. After the needs analysis was conducted, the following was the follow-up for the development of English teaching materials at vocational high school of Rogojampi. 1) hospitality English teaching material must be improved in several aspects that determine students' mastery of English through project-based teaching materials; 2) English curriculum materials in the independent curriculum must be re-examined to better suit the needs of students in the world of work; 3) there is collaborative cooperation between banyuwangi state polytechnic lecturers, English teachers at vocational school of Rogojampi, Curriculum

Team, and industrial partners in developing project-based learning to produce teaching factory learning.

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