

Developing An Authentic Assessment Rubric in Merdeka Curriculum Based on 21st Century learning Methods for 10th Grade Students

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ABSTRACT

Several schools in Indonesia have started to implement the Merdeka curriculum. This curriculum affects several systems in education, including the assessment process. Thus, the school needs to adjust to this curriculum, including the teacher and students. This study is conducted to develop an authentic assessment rubric based on the 21st century learning method in the Merdeka curriculum for assessing 10th grade senior high school students. In developing the product, the researcher uses the research method, namely Design and Development. 4 Stages must be passed in developing the product: Analysis, Design, development, and Evaluation stages. In collecting the data, 42 respondents, one English teacher and 41 students in SMAN 4 Singaraja, were involved. The data were collected with four instruments: observation, interview with the English teacher, questionnaire for students, and document analysis. Then, the data were analyzed with a mixed method. After being evaluated by several experts in 2 stages, the rubric is categorized as an excellent rubric and appropriate to be implemented by an English teacher in the English learning process.

Keywords: *Authentic Assessment, Merdeka Curriculum, 21st Century Learning*

INTRODUCTION

Nowadays, the world has entered the 21st century, making many life changes. Thus, people need to master the 21st century 4Cs (Critical thinking, Communication, Collaboration, Creativity) to be able to compete in the global society (Chiruguru, 2020). The skills of the 21st century refer to skills, work habits, insight, and character that are essential for human success (Malik, 2018). The 21st century will help and equip humans to face problems in real-life positions in the future. The demands of the 21st century make the education system develop dynamically, following humans' needs. Education aims to direct human beings to

know right and wrong insight (Harlan & Johan, 2014). Education is very useful for humans to face a world full of challenges.

Currently, education in Indonesia has started to implement the Merdeka curriculum. The implementation of the Merdeka curriculum aims to make the better education system. In addition, Covid-19 also spread the whole world, which impacts the education system. So, implementing the Merdeka curriculum is also stated as an effort for education recovery (Rizki & Fahkrunisa, 2022). The implementation of the Merdeka curriculum is regulated by the Minister of Education, Culture, Research, and Technology regulation no. 56 2022 concerning the guidelines for implementing the Merdeka curriculum in the context of learning recovery, learning and assessment processes, and teacher workload. The main concept of the Merdeka curriculum is to provide students with independent learning and thinking (Indarta et al., 2022). This curriculum aims to develop students' potential with their abilities by providing many learning experiences. The designed learning is focused on the culture, environment, and context of the students and involves the community and parents as partners (Siregar et al., 2022). The learning activities in the Merdeka curriculum also focuses on the learning activity in real-community environment (Maipita et al., 2021). Teachers' roles in this curriculum become mentors, facilitators, or coaches, and they must actively involve students in project-based learning activities (Arifa, 2022).

The implementation of the Merdeka curriculum, of course, has some changes related to the education system. The assessment process is one of the education parts affected by the Merdeka curriculum implementation. Based on the Merdeka curriculum assessment principle, the assessment process is an integrated part of learning. The assessment process in the Merdeka curriculum guides the students and teacher in determining future learning strategies by giving complete information through feedback (Siregar et al., 2022). The realization of the Merdeka curriculum can be seen from the implementation of authentic assessment (Rizki & Fahkrunisa, 2022). This kind of assessment is the one thing that is emphasized to be implemented. Authentic assessment encourages students to use skills, competence, and behavior that should be applied in students' real-life situations (Mohamed & Lebar, 2017). The teacher can assess the abilities and knowledge of the students and provide students a chance to apply those all in real-life conditions (Aziz et al., 2020).

In the assessment process, the learning activity must be supported by an appropriate learning method. The 21st century learning methods are appropriate if the teacher wants to implement authentic assessment in the teaching and learning activity. Project-based learning, problem-based learning, and discovery-based learning are the kinds of 21st century learning methods. Those learning methods are suitable to be used because providing learning activities in line with the demands of the Merdeka curriculum. In addition to the implementation of authentic assessment, the realization of the Merdeka curriculum implementation can be seen through the project-based learning process (Rizki & Fahkrunisa, 2022). The implementation of authentic assessment also enhances problem-solving, communication, and collaboration ability. All these skills can be achieved by using 21st century learning methods mentioned.

In implementing authentic assessment, teachers do not escape the obstacles they face. Many teachers feel that implementing authentic assessment is challenging (Fitriani, 2017). Not all teachers can understand using authentic assessment (Hayati et al., 2017). As a result, most teachers decide to use simpler

assessments. Moreover, there is a new curriculum implementation, so teachers struggle to adjust to the new curriculum.

SMAN 4 Singaraja is one of the driving schools implementing the Merdeka curriculum. Implementing the Merdeka curriculum becomes a challenge for the teacher in carrying out teaching and learning activities, especially in designing the learning process and the assessment itself. The teacher tends to use simple assessments without special instruments because there is no appropriate assessment instrument. Of all the 21st century learning methods, the teacher only implements one learning method, namely discovery-based learning. This learning method is stated as the easier method that can be implemented. The teacher feels confused if implementing a project or problem-based learning. Therefore, it is expected to have a clear instrument in the assessment process with the assessment tools, such as rubric, and equipped with the learning activity that uses 21st century learning methods.

METHOD

In this study, the researcher uses a development research method, namely Design and Development (DnD), adopted from Richey and Klein (2007). There are four stages that must be passed in designing and developing the research product, namely analysis, design, development, and evaluation. There are 42 respondents involved in collecting the research data. Four data collection instruments are used, namely observation, interview, questionnaire, and document analysis. The collected data were then analyzed with the mixed method. This study focuses on developing an authentic assessment rubric for assessing 10th grade students in the English learning process. The developed product is adjusted with the 21st century learning methods, namely project-based learning, problem-based learning, discovery-based learning, and the Merdeka curriculum. The product is evaluated by experts in the evaluation stage by using expert judgments before being stated and categorized as an appropriate authentic assessment rubric that can be applied in the English learning assessment process. To calculate the judgments' result and determine the quality criteria of the rubric, the researcher uses Nurkancana and Sunartana's (1992) formula. The formula can be seen in Table 1.

Table 1. Criteria of Product Quality Based on Nurkancana and Sunartana's (1992) Formula

Formula	Score	Criteria
$X \geq Mi + 1.5S_{di}$	$X \geq 121.5$	Excellent Rubric
$Mi + 0.5S_{di} \leq X < Mi + 1.5S_{di}$	$94.5 \leq X < 121.5$	Good Rubric
$Mi - 0.5S_{di} \leq X < Mi + 0.5S_{di}$	$67.5 \leq X < 94.5$	Average Rubric
$Mi - 1.5S_{di} \leq X < Mi - 0.5S_{di}$	$40.5 \leq X < 67.5$	Below Average Rubric
$X < Mi - 1.5S_{di}$	$X < 40.5$	Poor Rubric

FINDINGS & DISCUSSIONS

Four stages, namely analysis, design, development, and evaluation, were passed in developing the authentic assessment rubric for 10th grade. In the analysis stage, the researcher collected data in SMAN 4 Singaraja, one of the driving schools implementing the Merdeka curriculum. In conducting the

assessment of the English learning process, the teacher faced several challenges. This statement found after interviewing an English teacher on the learning and assessment process and analyzing several documents used by the teacher, such as the lesson plan (now is called the teaching module) and syllabus (now is called learning objective flow). Ten questions were delivered to the teacher. Related to the learning method, the teacher only uses communicative and discovery-based learning because these methods are categorized as easy and convenient. However, the project and problem-based learning have not been implemented yet, because the teacher has no appropriate instrument as guidelines. There is an assessment instrument in the school, but it cannot be used because the instrument has no updated and adjusted with the Merdeka curriculum.

The teacher also feels hard to determine the kind of students' project. Gaining students' participants is difficult. A creative and non-bored activity must be designed to gain students' motivation to learn. So, the teacher must maximize in designing the learning activity, preparing the learning material, and creating the learning media. The teacher also only used simple assessments without specific instruments, and the teacher stated that the project assessment took a long time to finish it. The teacher only focuses on students' learning outcomes and not paying attention to the process followed. During and at the end of the learning process, the teacher tries to give feedback to improve students understanding. Besides the interview conducted with an English teacher, the questionnaire also was conducted with the students. The 9 questions are asked to know the learning and assessment process in the classroom. Based on the questionnaire result, it was also found that there is no appropriate assessment in English learning. The students are only given traditional assessments such as tests, daily homework, and quizzes to assess learning outcomes. Whereas the learning process is also important to assess. Sometimes the teacher conducts performance tests, but it rarely happens. Even though the teacher has used one 21st century learning and conducted authentic assessment through performance assessment, it still needs to develop the learning activity and assessment process. An active and varied learning activity and complete assessment instruments and the tool will provide students better learning experience to develop students' abilities. Based on the founded finding, developing an authentic assessment rubric is necessary to create better learning and assessment processes for students and teachers. Several things need to be considered in developing the product, such as assessment rubric criteria, proper learning methods, and the types of assessment.

After analyzing the teacher and students' problem, a blueprint was designed before developing become authentic assessment rubric. The blueprint was designed based on the data collected in the analysis stage. The rubric consists of the learning topics, theme, learning objectives, learning method, learning activity, and type of authentic assessment that will be used to assess students. The rubric was used as the guideline to develop the authentic assessment rubric.

The final rubric was continuously developed to become an authentic assessment rubric in the development stages. The learning activity designed in the blueprint was developed based on the learning methods syntax equipped with the teacher's instruction. After that, the assessment types were determined based on the learning activity. There are five types of assessment rubrics, namely assessment rubrics of the learning process, learning performance, product or project, and self-assessment of the process and the result of learning. The

authentic assessment rubric is also equipped with learning video resources, worksheets, and other learning materials based on the learning activity. In determining the grading scale criteria, a triage theory adopted from Rapaport (2011).

Syntax:

1. Elaborating a problem:
 - Students are given a problem
 - Students are directed to elaborate the problem given
 - Students are guided to list everything about asking and giving opinions
2. Investigating the problem in a collaboration:
 - Students are facilitated by the teacher to find out the information about asking and giving opinions
 - Students are given the examples of asking and giving opinions in the form of video



SCAN ME

<https://qrco.de/bdgGJb>

Scan the QR code to get the learning videos

- Students are guided to work in a team or pair to ask and give opinions
3. Determining the method to investigate (The teacher is determining the method that can be used to help and facilitate the students in doing the investigation), it can be:
 - Finding the information through the sources, such as book, internet, video, and others
 4. Writing the report:
 - Students are directed to write down all information in simple report
 5. Analysis and evaluate the result:
 - Students are directed to analyze and evaluate friend's work
 - Students are directed to deliver the analysis and evaluation results

Figure 1. Example of Syntax

RUBRICS FOR THE LEARNING PROCESS

Num.	Grading Criteria	Good (3)	Average (2)	Poor (1)	Score
1	Elaborating a problem				
	- The students are given a problem	The students really understand the problem given	The students less understand about the problem given	The students do not understand about the problem given	
	- The students are directed to elaborate the problem given	The students have good idea about the problem given and know what to do	The students have less idea about the problem given but still do the effort about what to do	The students have no idea about the problem given and do not know what to do	
	- The students are guided to list everything about asking and giving opinions	Students are able to list everything which are needed to understand asking and giving opinions by themselves	Students are able to list everything which are needed to understand asking and giving opinions with teacher's help	Students are not able to list everything which are needed to understand asking and giving opinions	
2	Investigating a problem				
	- Student are facilitated by the teacher to find out the information	The students are able to find the information about the problem given after being	The students only able to find less information about the	The students are not able to find the information about the	

Figure 2. Example of Rubric

To know the quality of the developed authentic assessment rubric, 2 stages of expert judgments were conducted in the evaluation stage. Two stages were conducted to ensure that the developed product is appropriate for implementation. The expert judgments result can be seen in table 2 and table 3.

Table 2. Expert Judgments Stage 1

Num.	Judges	Score	Criteria
1.	Expert 1	124	Excellent
2.	Expert 2	127	Excellent

3. Expert 3 121 Good

Table 3. Expert Judgments Stage 2

Num.	Judges	Score	Criteria
1.	Expert 1	129	Excellent
2.	Expert 2	133	Excellent
3.	Expert 3	134	

After conducting the expert judgments stages 1, the product was revised based on the expert evaluation. After revising, the expert judgments, stage 2 was conducted. The result of the expert judgment stage 2 is the final result of the rubric quality. Three experts said that the rubric was categorized as an excellent rubric. Based on the judgments, it can be said the rubric is appropriate for 10th grade students.

Based on the finding, developing an authentic assessment rubric based on 21st century learning in the Merdeka curriculum for assessing 10th grade senior high school students needs to be discussed. The Design and Development research method adopted the Developing model from Richey and Klein (2007) theory in developing the product. In developing the product, 4 stages were passed, starting from analysis, design, development, and evaluation. The product was developed based on analysis results conducted using four methods: observation, interview, document analysis, and questionnaire.

Merdeka curriculum as a new curriculum started being implemented by all school levels in Indonesia. The implementation of this curriculum is stated in the Ministry of Education, Culture, Research, and technology regulation number 56 2022. SMAN 4 Singaraja is one of the secondary schools that implement this curriculum. Based on the finding, implementing the Merdeka curriculum is challenging for this school. Many education systems need to be adjusted to this curriculum, including the learning and assessment processes. The Merdeka curriculum focuses on learning processes that provide an experience for students to learn in the environment of a real-life community (Maipita et al., 2021). The Merdeka curriculum also allows students to learn flexibly (Tedjokoesoemo et al., 2021). So, the potential abilities of the students can be explored and developed.

A rubric is an assessment tool that can be a learning guide for the teacher to create an active learning activity. A rubric helps teachers to assess and practice students' performance, skills, and knowledge effectively (Chowdhury, 2018). An assessment tool should be created to measure students' interactions, behaviors, and skills in school and helps the teacher to identify students' academic achievement, language competencies, and literacy (Tsagari & Spanoudis, 2013). An authentic assessment is a proper assessment to be implemented in the Merdeka curriculum. An authentic assessment provides students with a real-life learning experience. The teacher can assess students' ability and knowledge and encourage them to apply their skills and knowledge in real real-term (Nguyen & Phan, 2020). Using a rubric in the assessment process could make implementing authentic assessment in the learning process easier.

In developing the authentic assessment rubric, the 21st century learning methods are used, namely project-based learning, problem-based learning, and discovery-based learning. The rubric was developed based on those syntax methods. Using 21st century learning methods can help students gain learning experiences as the Merdeka curriculum demands. The authentic assessment

rubric product is equipped with the learning activity, teacher's instruction, learning resources, worksheets, and the rubric based on what is assessed. The authentic assessment rubric provides an assessment of the learning process, an assessment of student performance, product, or project, and a self-assessment. Rahmawati (2017, as cited in Suwartono et al., 2019) states that the learning input, process, and output can be assessed through authentic assessment. The learning process assessment rubric was developed based on the learning method syntax. The teacher will focus on the student's activity during the learning process. The performance, product, or project assessment rubric was developed to assess students' performance, product, or project during the learning process. Then, self-assessment was developed in order to direct students for doing reflection on themselves during the learning process. The student's strengths and weaknesses can be identified by self-assessment (Dharma & Adiwijaya, 2019). In authentic assessment implementation, the teacher usually uses project, performance, product, and self-assessment (Marhaeni & Kusuma, 2017).

The authentic assessment rubric development started with the conduct analysis stages. The result of the analysis stage is used as a guideline for designing the product. Before developing the product, a blueprint was designed as an initial step before developing the rubric. The blueprint consists of learning methods, learning topics, learning objectives, learning activity design, and the types of assessment used to assess the students. After designing the blueprint, then the blueprint was developing become an authentic assessment rubric. The assessment rubric consists of information, such as learning topics, themes, semester, time allocation, learning objectives, learning methods, learning activity based on learning methods syntax, and the assessment rubrics types. Before being stated as an appropriate authentic assessment rubric, the product was evaluated in the evaluation stage. The evaluation was conducted by using expert judgments. The expert judgments were conducted in 2 stages. Finally, the authentic assessment rubric was categorized as an excellent rubric and proper to be used in a learning process.

CONCLUSIONS AND SUGGESTIONS

This study aims to develop an authentic assessment rubric in the Merdeka curriculum based on 21st century learning methods for assessing 10th grade senior high school students. Adjusting an education system to the new curriculum is not easy. The Merdeka curriculum aims to provide many learning experiences for students to explore and develop students' potential. The learning process in this curriculum is also emphasized by giving learning experiences in a real community environment. Authentic assessment is one of the recommended assessments in this curriculum because students involved in the learning process can be seen through project-based learning and authentic assessment. In implementing authentic assessment, of course, many obstacles are faced by the teacher because adjusting to this curriculum requires time. No appropriate assessment instrument can be used, so teachers tend to use a simple instrument in assessing students. In addition, the learning methods used only discovery and communicative-based learning. Whereas project and problem-based learning are emphasized to be used. Therefore, an authentic assessment rubric was developed with 21st century learning, namely project-based learning, discovery-based learning, and problem-based learning. This product is used to assess 10th grade senior high school students in the Merdeka curriculum. The product was

developed with a development research method, namely Design and Research (DnD), by adopting Richey & Klein (2007) development model theory: Analysis, Design, Development, and evaluation. The product consists of a learning activity based on the learning methods syntax, learning resources, and 5 types of authentic assessment rubrics, namely rubric assessment for the learning process, performance, product, project, and self-assessment. The quality of the product was categorized excellent rubric after conducting 2 stages of expert judgments in the evaluation stage. So, it can be concluded that the product is appropriate for assessing 10th grade senior high school students in the Merdeka curriculum.

Based on the result, it is suggested that the 10th grade students need to follow all steps consisted in the product to improve student's ability and get better experiences in learning. The teacher also suggested implementing the authentic assessment rubric to provide learning activities based on Merdeka curriculum demands. This authentic assessment rubric is also useful for enhancing students' skills. For the other researchers, this study on developing authentic assessment can be used as a reference in conducting a similar study.

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