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REDESIGN PERFORMANCE ASSESSMENT AS ASSESSMENT FOR LEARNING TO IMPROVE 21ST CENTURY HEALTH LITERACY

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Abstract: This study aims to redesign performance assessment as Assessment for Learning to improve students' 21st century health literacy. The subjects in this study were 11th grade high school students in West Java, 2 classes as pilot classes and 1 class as a research class. The research method used is Research and Development (RnD) which is simplified with the ADDIE model consisting of analysis, design, development, implementation and evaluation stages. The redesigned assessment include tasks and rubrics that can improve students' 21st century health literacy based on the Partnership US-Based 21stst century skills (P-21) framework. The results of redesign performance assessment as assessment for learning at the implementation stage are quite effective with the number of students (48.6%) having N-gain in the high category and medium category (51.4%).

Keywords: performance assessment, assessment for learning, 21st century health literacy

***Abstrak**: Penelitian ini bertujuan untuk mendesain ulang perangkat asesmen kinerja sebagai Assessment for Learning untuk meningkatkan literasi kesehatan siwa abad ke-21. Subjek pada penelitian ini adalah siswa kelas XI SMA di Jawa Barat, 2 kelas sebagai kelas uji coba dan 1 kelas sebagai kelas penelitian. Metode penelitian yang digunakan adalah Research and Development (RnD) yang disederhanakan dengan model ADDIE yang terdiri dari tahap analisis, desain, pengembangan, implementasi dan evaluasi. Perangkat asesmen yang di desain ulang diantaranya task dan rubrik yang dapat meningkatkan literasi kesehatan siswa abad ke-21 berdasarkan framework Partnership US-Based 21st century skills (P-21). Hasil pengembangan desain ulang asesmen kinerja sebagai assessment for learning pada tahap implementasi cukup efektif dengan jumlah siswa (48,6%) memiliki N-gain dengan kategori tinggi dan kategori sedang (51,4%).*

***Kata Kunci:** asesmen kinerja, assessment for learning, literasi kesehatan abad ke-21.*

INTRODUCTION

Life in the 21st century demands various abilities that must be mastered so that education is expected to prepare students to become successful individuals in life (Zubaidah, 2016). One of the 21st century abilities that is a priority to be developed, especially through biology learning, is health literacy (Permana, 2016). Health literacy includes the ability of individuals to obtain, understand, assess and apply health information so students be able to make considerations and decisions in everyday life regarding health care, disease prevention, and health promotion (Sorensen *et al,* 2012; WHO, 2013).

The challenges experienced by Indonesian society today include a very low level of health literacy (OECD, 2013) as an influence of education that has not touched the realm of health literacy (Permana *et al,* 2016). In order to improve students' health literacy, one of the important factors in learning, namely assessment, needs to be considered. Measurements used in assessing health literacy are usually developed for health services. Some of the assessments used include the Rapid Estimate of Adult Literacy in Medicine (REALM) and instruments that assess reading

comprehension and numeracy skills such as the Test of Functional Health Literacy in Adults (TOFHLA) (Gibbs & Chapman-Novakofski, 2012). In addition, questionnaires such as The Health Literacy Study-Asia (HLS-Asia) describe health literacy as the knowledge, motivation and competence to access, recognize, assess and apply information to make decisions related to health care, disease prevention and health promotion (Pelikan *et al.,* 2014).

Commonly used measurements are not sufficient in assessing students' health literacy in the 21st century, especially when it will be developed through biology learning. This is because health literacy includes cognitive and social skills as well as the level of knowledge, personal ability, and confidence to take action to improve personal and community health by changing lifestyles and living conditions (WHO, 2007; Nutbeam, 2008). Assessment for learning is promoted internationally as a strategy to improve the quality of student learning to improve students' health literacy (OECD, 2005). The basic assumption is that when students know what they are learning, how they are learning it, and how to improve their learning, students will build an identity as independent learners (Willis, 2011).

Health literacy of 21st century students is a complex competency, not only knowledge but students are also required to understand, assess and even apply health information in real life. Because of this complexity, health literacy cannot only be assessed by tests (Wulan, 2009). Therefore, another assessment is needed in assessing health literacy, namely using performance assessment (Stiggins, 1994; Wren, 2009). Because performance assessment is an assessment that involves students in an activity that requires students to demonstrate ability as a manifestation of knowledge mastery (Stiggins, 1994). Performance assessment can assess students' abilities holistically both assessing knowledge, attitudes, and abilities and allowing students to show what they can do (Wulan, 2008).

Performance assessment is an assessment that involves students in an activity that requires students to demonstrate ability as a manifestation of knowledge mastery (Stiggins, 1994). Through performance assessment teachers can assess students' abilities holistically both assessing knowledge, attitudes, and abilities that allow them to show what they can do (Wulan, 2008). Although performance assessment is considered very important, its use is still very limited (Wulan, 2007). This is because teachers experience various difficulties and obstacles both in planning and implementation. These obstacles include teachers finding it difficult to prepare assessment tools such as rubrics and tasks. A study describing the profile of prospective biology teachers at a university with excellent accreditation found that most of the tasks created had similar characteristics, namely no details, some of the tasks were unclear, there was no time limit and the expected performance criteria were not included (Wulan, 2009). Even teachers who have taught in the classroom still find it difficult to carry out performance assessment planning related to determining the subject of the performance task, including the teacher's inability to determine the right performance task for the student level, the teacher's inability to determine performance outcomes that are in accordance with the curriculum, unable to prepare performance tasks for different subjects, and difficulty indicating student performance improvement. As for the preparation of rubrics, the obstacles encountered include not knowing how to decide on assessment criteria, prepare rubrics and compile analytical rubrics (Wulan, 2009; Metin, 2013). Therefore, the author feels the need to redesign performance assessment as an assessment for learning to reduce the problems felt by teachers so that it is more applicable as well as can be used by teachers to assess and improve students' health literacy in the 21st century which is an essential competency for students' real life.

METHOD

The method used in this research is a limited research and development method adopted from the *Research and Development* (RND) method (Gall *et al.*, 2003) which is used to produce certain products based on the results of analyzing the shortcomings of previous products, and then testing the effectiveness of the new product (Sugiyono, 2013). Research and development was carried out by following the ADDIE model (Petersen, 2003; Branch, 2009), among others:

Analysis, which is identifying problems that occur in the process of implementing performance assessment as assessment for learning*; Design*, which is designing a redesign of performance assessment in the form of assessment tools, namely *tasks* and rubrics to assess students' 21st century health literacy in learning biology on the content of the human digestive system; *Develop*, which is the development stage which is the implementation of the design stage through several activities including redesigning performance assessment tools and testing 21st century Health literacy standards, carrying out validation of performance assessment tools, conducting trials, and making improvements based on recommendations and suggestions from validators and trial results; *Implement*, which is the implementation stage carried out to find out whether the redesigned product is feasible to use to assess student health literacy as well as conducting limited field tests; *Evaluate*, which is the evaluation stage based on the results of data interpretation of the implementation of the redesign results to then draw conclusions.

RESULT AND DISCUSSION

At the analysis stage, a gap was found between the demands of 21st century student skills related to health literacy that must be possessed by each student and the reality in the field. Learning outcomes related to health literacy that must be possessed by each student as published by the Partnership for 21st century learning (2015) include: Able to obtain, interpret, and understand basic health information; Understand preventive measures in maintaining health including proper diet, nutrition, exercise, and efforts to avoid disease and stress risks; Use available information to make appropriate health-related decisions; Set and monitor personal and family health goals; And understand national and international public health and safety issues. But in reality most students still have a relatively low level of health literacy (Permana, 2016; Hadisiwi & Suminar, 2016).

Another fact found in the analysis stage is the difficulty of teachers in planning and implementing performance assessment as assessment for learning. Based on the results of the literature study according to Wulan (2008) and Metin (2013) at the planning stage, teachers mainly experience difficulties in preparing performance assessment tools, namely rubrics and *tasks* that will be used. In line with the results of the literature study, the survey results through teacher questionnaires also indicated the same problem, namely most teachers (75%) found it difficult to observe and record student performance in the classroom.

Based on the results of the problem analysis and subsequent needs, a redesign design is carried out to meet the needs to overcome the identified problems. The problem of low student health literacy is felt to be solved by integrating the development of 21st century student health literacy with biology learning through performance assessment as assessment for learning, as revealed by Haka (2013) in his study that performance assessment can foster concern for organ health and love all important organs in the body. The results of the initial design resulted in a redesign plan and then continued to the development stage. The performance assessment tool as *assessment for learning* used in this study is in the form of *tasks* and rubrics intended to assess students' 21st century health literacy.

The task development is guided by the things that must be considered in constructing tasks adapted from Smith & Smith (2014), such as: a) Context: the context is clearly defined and relevant to assessing the process and products produced by students; b) Material: there is material information available that students can use to complete the task; c) Instructions: the instructions for completing the task to be carried out are explained; d) Performance requirements/criteria: the student performance criteria required by the task are explained; e) Options: there are choices of tasks that can be completed and several approaches that can be taken to complete the task; f) Reflection/communication: The task encourages communication between teacher and students as well as between students and has an affective response to what students learn from the task. There are 3 activity themes provided by this tasks, first the human body which focuses on understanding the performance of the body, second health problems which guide students to find problems and health problems that can occur if the body's functions are not running

properly, and personal health which guides students in efforts to maintain their health which are adjusted to the performance indicators of 21st century health literacy.

After designing the task, then researchers developed the rubric. In designing the rubric, the rubric criteria adapted from Glivi *et al* (2016) and Sttigins (1994), including: Performance description: assessment guidelines describe/describe the performance components that students perform clearly, sequentially, represent all performance, and use standardized language so that it is easy for students to understand; Key concepts: there are specific key concepts about the digestive system and specific performance that students must perform; Suitability to student abilities: Assessment guidelines are developed with students by taking into account students' abilities; Learning outcomes: assessment guidelines describe specific and well-defined learning outcomes; Feedback: Assessment results can be directly taken for decision making for teachers as well as providing feedback to students to improve their performance; Gradation of scoring: there is a clear gradation of performance and is equipped with a gradation of scores obtained. Similar to the task, the rubric goes through the stage of expert judgment and then tested to get a more feasible device. To maintain the validity and reliability of the redesigned performance assessment tool, in addition to carrying out strategies in the form of logical validation by asking for expert judgment and testing the tool, strategies were also carried out in the form of testing the consistency of the designed rubric through intrareliability by one rater.

The procedure for testing rubric consistency is explained by Wulan (2018) by conducting repeated assessments of task samples that students have done at different times. The assessment was carried out with three repetitions using the same rubric to assess the same work. The second assessment was conducted a day after the first assessment. Then the third assessment was conducted one week after the second assessment. The next stage is to compare the three assessment results. The assessment is carried out on several samples of works that have high, medium and low criteria. The assessment results need to show consistency, that is, the same work is at the same performance level in all three assessments. Both the first and second and third performance assessments must show the same level by applying a deviation tolerance for the assessment results in the form of a percentage that has a match of 70-80%. If the same work is assessed differently by the same rater or researcher beyond the tolerance limit, the assessment is not reliable. If the assessment results are inconsistent, the rubric and assessment criteria need to be reviewed and improved because they cannot be interpreted consistently. Table 1 below presents intrareliability testing on 3 samples of student work in each given task.

Table 1. Rubric *intrareliability* testing

Rubric	Sample	Assessment Score			Result match	Average match
		First	Second	third		
Task 1	1	88	88	81	92 %	94 %
	2	69	63	63	91 %	
	3	38	38	38	100 %	
Task 2	1	100	94	88	94 %	90 %
	2	81	75	75	93 %	
	3	75	63	63	84 %	
Task 3	1	100	100	100	100 %	95 %
	2	94	88	88	94%	
	3	75	69	63	92 %	

Based on the *intrareliability* test shown in Table 1 above, it can be seen that the average match results are above the upper limit of the allowable tolerance of 80%. Thus, it can be concluded that the rubric used in each *task* is in the reliable category.

The results of the implementation of performance assessment as assessment for learning can be seen based on the N-gain value obtained during learning. The value comes from the test questions that have been developed and tested. Table 2 below displays the acquisition of 21st century student health literacy scores.

Tabel 2. Data on *pretest* and *posttest* scores

Value Data	Pretest	Posttest
Average	38	79
Minimal	6	44
Maximal	81	100

Based on Table 2, it is known that the increase in the average value of students' 21st century health literacy is 41 points after implementing performance assessment as assessment for learning. The acquisition of student N-gain can be seen in the graph shown in Figure 1 below.

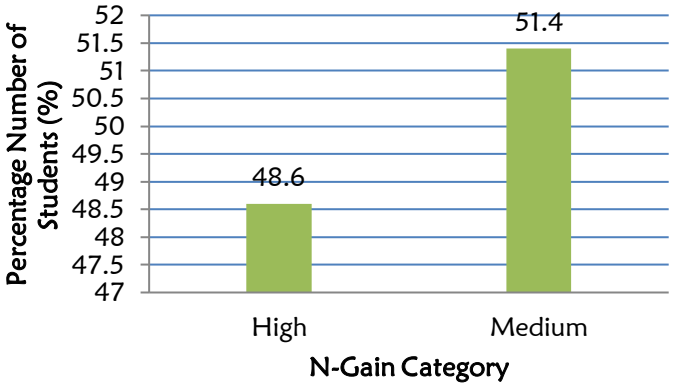

Figure 1. N-Gain of 21st Century Health Literacy

Based on Figure 1 after implementing web-based performance assessment as assessment for learning is 48.6% of students get N-gain in the high category and 51.4% get N-gain in the medium category. The implementation of performance assessment as assessment for learning by providing feedback in improving students' health literacy has a significant effect on improving students' 21st century health literacy on each task. As illustrated through the graph of the acquisition of the average student score in each task in Figure 2 below.

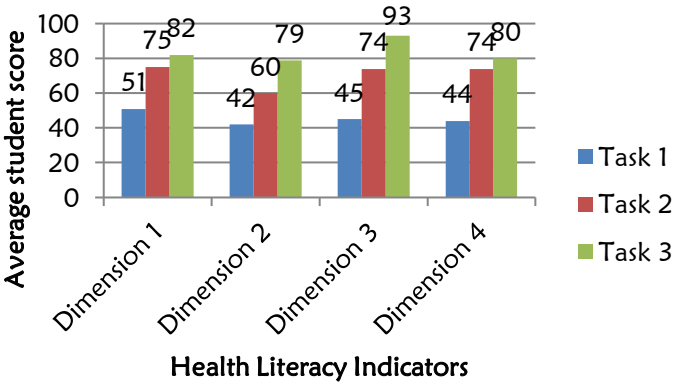

Figure 2: Improvement in students' health literacy for each dimension

Description:
Dimension 1: Getting/acquiring health-relevant information
Dimension 2: Understanding health-relevant information
Dimension 3: Processing/assessing health-relevant information
Dimension 4: Applying/using health-relevant information

The improvement of students' 21st century health literacy dimensions in each task is the effect of providing specific feedback on indicators that still do not match the expected performance *criteria* on tasks that have been done by students previously as an important element in Assessment for Learning. As stated by Evans (2013) that one of the principles of

effective feedback is to provide clear and focused feedback on how students can improve their performance including hints on important parts for students to improve.

CONCLUSION

The results showed that the problems faced in using performance assessment for students' health literacy in the 21st century, *first*, students' health literacy is low, partly due to inappropriate assessment so that students do not get appropriate feedback. *Second*, existing health literacy measurement tools are less relevant to learning. *Third*, teachers' difficulties in planning and managing performance assessment as assessment for learning. The results of the development of performance assessment redesign as assessment for learning at the implementation stage are quite effective with the number of students (48.6%) having N-gain in the high category and medium category (51.4%).

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