Digestive system for the re-design of performance assessment

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Abstract. In the 21st century this required an increase in student health literacy. Literacy of digestive health is important to be improved. Various efforts were made, one of them by using performance assessment for learning. The purpose of this study is to describe the use of re-design performance assessment to improve student health literacy. The research method used is descriptive method. Instrument used consisted of teacher questionnaire, student questionnaire, task, rubric and feedback mechanism. Health literacy is measured by 4 dimensions on the Partnership-21 Century Skills framework. The data were analysed descriptively. The results of the use of tasks, rubric and feedback mechanism obtained an increase in the fourth dimension of student health literacy.

1. Introduction
Health is the basic capital for the nation's development. Healthy human resources can guarantee the quality of work productivity. Health is a basic human right for every human being [1]. In the 21st century a very diverse need of humans who have health literacy. Health literacy is health-related knowledge about healthy living [2]. Health literacy by WHO (1998) is cognitive and social skills that determine the motivation and ability of individuals to gain access to understand and use good information [3]. Schools as the printer of the population are obliged to equip students about health literacy. This is in accordance with the Minister of Health Regulation number 741 in 2008 on Minimum Service Standards for Health, namely primary health care including in servicing the health of students [4].

Health literacy is one of the themes listed in the framework of the 21st century learning. Among framework 21st century learning, health literacy is closely associated with teaching biology at school. Health education can be implemented through learning biology [5]. By having health literacy students are expected to have a strong competitive edge to face the 21st century. But in reality, according to research OECD (2014) founded the data that public health literacy Indonesia is still very low [6], this is due to research on health literacy have not touched the aspect of education [7].

Previous research was conducted by Permana et al (2016) which resulted in data that the health literacy of high school students in Malang is still low. The study measured the health literacy performed by everyday high school students including aspects of hygiene, food, drink, smoking habits, health education and sports aspects. Healthy actually started from what we eat, healthy intestine is a requirement for healthy living. It is therefore necessary with the right material to use the system in improving the student's health literacy.

According to results of initial research questionnaire regarding the provision of health literacy on learning biology in school obtained the data that 12.5% of teachers are on duty only associated with digestive health literacy, this is because teachers are still difficulties in measuring health literacy in
learning. This is in line with the results of the student questionnaire as many as 79% of students reported not knowing about digestive health literacy.

Effective learning can be seen from the process and the results. How to measure the success of the process and learning outcomes can use performance assessment. Performance assessment can reveal the profile of learners as a whole [8], but it is through the implementation of assessment can know the effectiveness of a teaching and learning [9]. But there are barriers in the use of performance assessment, including the implementation of the performance assessment ratings tend to be subjective and performance standards are not clear [10], the absence of performance assessment instrument as well as the difficulties teachers write performance assessment [11]. Besides the complicated procedures and rules in the assessment of performance that caused it difficult to learn and apply [12]. Therefore it is necessary research that aims to re-design the more applicable performance assessments and simultaneously can increase student is health literacy on digestion material.

Health literacy indicators used include four dimensions of which acquire or obtain information relevant to health, understand the information relevant to health, process or assess information relevant to health and apply relevant information to health [13]. This indicator is a health literacy development of the 21st century learning framework. The re-design of the performance assessment carried out which include provision task, rubric and feedback to the students. Digestive system material used include ingestion of food, diseases or disorders in the digestive system and efforts to maintain personal hygiene. Through the provision of tasks and performance assessment rubric accompanied by feedback is expected to improve digestive health literacy of students.

2. Methods

This study focuses on the results of the implementation of the re-design of task performance assessment on the achievement of health literacy dimension in task 1, task 2 and task 3. The research subjects are 35 students of eleventh grade High School in Purwakartacty. The research procedure begins with a preliminary study by giving questionnaires to teachers and students about the implementation of performance assessments in health literacy learning on the usual digestive system. The processed data is the student's performance score on the task of re-design. Data is processed descriptively. The focus point of this research is the aspects of the re-design of tasks performed and the results of its application to the ability of students' health literacy in applying information relevant to health.

3. Result and Discussion

3.1. The fourth dimension of health literacy rubric

Figure 1 shows the rubric used to assess student is ability to apply relevant information with digestive health. The rubric has 3 scoring (3.2 and 1) is the development of health literacy dimension according to Sorensen which refers to The Partnership 21st century learning.

Rubric results are used to assess the development of the third task. Task 1 aims to determine the students ability in apply knowledge on the process of digestion. Task 2 aims to determine the student’s ability to apply the knowledge on the digestive system abnormalities. While the task 3 is to determine the ability of students to apply the knowledge on making healthy menu daily according to body are caloric needs. The task is part of the digestive system of essential material. The rubric is given in the form of a self-assessment to students, it is one of the feedback into the use of performance assessment. Feedback in learning is one of the pedagogical strategies in professional learning [14]by giving the feedback form of self-assessment is expected to make a student’s performance is better than previous performance.
Figure 1. This figure represents the development of the fourth dimension of health literacy rubric.

Figure 1 shows the rubric which is a task execution instruction as a guide for students. The question posed in task 1 is "Why fiber-rich foods such as fruits, vegetables, and grains, and drinking plenty of water can help digestion?". The answer is expected that students can associate the concept of fiber as well as its function in the digestive process. However, based on the answers of the students, 35 students did not try to answer this question. That is to say not generated score on the question task 1, based on the results of the analysis task.

3.2. Table re-design task
Table 1 shows the results of analysis of re-design task 1. The re-design includes four aspects which includes the construction of a question, a series of questions the task, the concept of the task and the task linkages with indicators rubric.

Table 1. Re-design task 1 trial results in the improvement of some aspects of the task.

<table>
<thead>
<tr>
<th>Construction of the question to apply knowledge only implicitly so that students difficult to answer</th>
<th>Clarify instructions asking questions starting from the concept and its application in the context of the question.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The series of questions the task cannot lead students to be able to answer questions</td>
<td>Providing a structured question and steering</td>
</tr>
<tr>
<td>The concept of the task is not so understood the students, so that students' difficulties to answer</td>
<td>Give a little explanation of the concept at the beginning of matter (introductory concepts)</td>
</tr>
<tr>
<td>Linkage task by rubric is not so clear indicator clearly defined, so that students are not able to answer</td>
<td>Providing self-assessment that includes the rubric of health literacy</td>
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</tbody>
</table>

Table 1 show the deficiencies contained in the task 1. So the second task required the re-design of a task so that students are expected to answer the questions that were assigned. In task 2 themed digestive system abnormalities revision of the repair task with task 1 as a guide. Problem task 2 is: "How do you know you are overweight? How can you achieve and maintain a healthy weight?" Before the issue given there are snippets of narrative about obesity is equipped with a source of basic health research in 2013. Additionally before granting second task, students were given self-assessment rubric is a picture of health literacy. This is as a feedback from performance assessment has been done before in task 1. Self-assessment form following statements scores may be achieved by students in health literacy scores. This is in line with research that has been done in the form of a statement that a self-assessment feedback can improve learning [14,15].

In the third task, the student is given a question, namely: "The following table is presented of some food calories. Determine the daily diet with the right calories if a teenage boy has the weight 60kg, height 150 cm and classified as moderate activity (30%) of the body's caloric needs ". Then
presented a formula to measure the total calorie needs and food table along with the number of calories. Task 3 was also prepared based on the re-design of the previous task.

Based on the answers given students on task 1, task and task 3, required the addition of the type of score on the rubric of performance. The score is zero the score is given to students who do not write anything on the answer sheet task. It is very necessary in order to distinguish between students who do and do not work at all. As written Wulan (2009) that the performance score can be zero if there is no effort of students in obtaining progress in learning [16].

Table 2 shows the results of students' health literacy from task 1 to task 3. The visible improvement in student scores in answering questions is due to refinement of the task from start to finish interspersed with self-assessment as a feedback in performance appraisal.

<table>
<thead>
<tr>
<th>Task</th>
<th>Health literacy scores the fourth dimension (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>4.29</td>
</tr>
</tbody>
</table>

Table 2 shows the increase in performance scores of students in answering the questions in the task assigned. In the task 1 all students are not able to answer the question, after the task analysis found aspects that need to be changed as shown in table 1. After that do feedback form of self-assessment in the form of a statement, it does cause an increase in the score. Students are able to answer, although not in accordance with context and concepts. Based on the results of the task 2, showed that the need for early clarification of the concept as a concept introduction. Therefore, the task 3 showed narrative introduction to the concept at the beginning of the problems. It cause increase in the scores obtained by students. Already, there are students who can answer the question appropriately in accordance with the context and concepts as much as 4.29%.

The material of the digestive system especially for obesity is an important issue to be studied. Obesity has a major contribution to the emergence of chronic diseases and digestive system disorders. In Indonesia, the problem of obesity and malnutrition often appear together [17]. Through learning of digestive health literacy with re-design tasks, teachers and students can contribute to solving the problem.

The material of the digestive system in the task is very applicable to the daily life of the students, but based on needs analysis using teacher questionnaire, it is found that only 27% of teachers ever do it. Teacher difficulties lie in the preparation of the task and also the rubric [12,18]. It is hoped that with the result of re-design task performance assessment and health literature rubric interspersed with feedback teacher can use it in learning.

4. Conclusion

There is an increased ability to apply information relevant to student health literacy through improving student performance scores in answering tasks. This can happen by redesigning task performance and providing feedback in the form of self-assessment to students during work assignments. Studying the digestive system can improve student health literacy.

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6. References


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