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VALIDITY OF STUDENT WORKSHEET BASED ON ROLE PLAYING IN HUMAN EXCRETORY SYSTEM MATERIAL TO IMPROVE MOTIVATION AND LEARNING OUTCOMES

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Abstract

This study aims to describe the validity of student worksheet based on role playing in human excretory system to increase motivation and learning outcomes. The method used is the validation method with the instrument in the form of a validation sheet. The results of the study were obtained from the results of validation by two science lecturers and one junior high school science teacher where in the didactic requirements get a mode score of 4 with a valid criteria, the construction requirements get score of 4 with a valid criteria, the technical requirements get score of 5 with a very valid criteria and the suitability aspect with role playing models get a score of 4 with valid criteria. Based on the results of these studies, it can be concluded that student worksheet based on role playing is valid to trying out to improve motivation and learning outcomes.

Keywords: *Student worksheets, role playing, motivation, learning outcomes.*

INTRODUCTION

The learning process is said to be effective if it has been going according to the learning objectives, then the teacher's role is needed in the selection of methods and media that are appropriate for students. This statement is supported by Wena (2009), which states that the selection of good learning media by educators will affect the achievement of learning objectives to be more effective. One of the learning media used is student worksheet.

Student worksheet is a sheet containing information and instructions on activities that can develop a thought process where students can work independently on a learning activity (Arsyad, 2011). The existence of student worksheet has an important role in learning. In order to be a good quality learning media, then must fulfill the requirements of validity (Plomp, 2013). According to Ministry of National Education, the feasibility of the media based on aspects of validity is obtained through media validation to experts. The feasibility criteria in compiling student worksheet components include didactic requirements, construction requirements, and technical requirements (Depdiknas, 2004).

The 2013 curriculum emphasizes that learning requires an enjoyable learning environment through active learning. In this case, student worksheet is a means to help teaching and learning activities become more active (Rahayu & Budiyono, 2018). The impact of active learning implemented in the classroom according to Soltanzadeh, Seyed, & Sakineh (2013) is that it can increase students' learning motivation. This is supported by Aisiyah, Anik, & Nisfil (2018) which states that high learning motivation will make students focus when following the learning process so that it does not close the possibility of achieving good learning outcomes. However, the reality shows that active learning centered on students is still not implemented as expected.

Based on the results of pre-research in SMP Negeri 22 Surabaya with 31 respondents of VIII grade students, as many as 90.3% of students stated that learning science is not fun because it only uses the lecture method and power point media. According to Nugroho & Gunansyah (2013), such conditions have caused ineffectiveness in developing mastery of concepts in learning. The low learning motivation of students has an impact on learning outcomes which according to the results of interviews with science teachers stated that 60% of students scored below the Minimum Completeness Criteria of 80. Then 93.5% of students stated that science subjects were considered difficult to understand. Material that is considered difficult by students according to the results of the interview is a lot of memorized material such as excretory system. Excretory system material is abstract and has many scientific terms so that it takes a lot of memorization (Cahyaningtyas & Raharjo, 2017).

One of learning model that can provide learning experiences for students is the role playing learning model. According to Huda in Nugraha (2019), role playing is a model that involves the imagination of students in acting as living figures or inanimate objects. According to Sutiyani, Sri, & Arif (2015), through this learning model students can build their own knowledge because there is an opportunity for each student to gain a

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learning experience. In learning that uses role playing models, it requires student worksheet which includes instructions on role playing activities according to the learning objectives. Through role playing based student worksheet is expected to be able to guide students to understand the concept of material by doing role playing scenarios with the aim of increasing motivation and learning outcomes.

The importance function of student worksheet is to help students in participating in learning is supported by the results of research conducted by Putri (2011) and Rizkiyah, Raharjo, & Ulfi (2015), which shows that learning using student worksheet based on role playing in cellular respiration and the digestive system material can increase the activeness and learning outcomes of XI grade Senior High School students.

Student worksheet which was developed in the excretory system material of VIII grade Junior High School has a role playing component according to Putri (2011), namely scenarios, guided notes, and group discussions. Moreover the features contained in the developed student worksheet adapted to the steps of role playing learning models according to Joyce & Weil (2003), including the mini lab features and stage schemes that are used to attract the interest and direction of thinking of students at the preparation stage for role playing activities.

Based on the description above, it is necessary to have research to assess the feasibility of student worksheet based on role playing in material of the human excretory system in increasing motivation and learning outcomes in terms of the validity aspects before the learning takes place**.**

METHOD

The method used in this study is a validation method to assess the feasibility of student worksheet from the aspect of validity. The target in this research is student worksheet based on role playing in the material of the human excretory system which will then be validated. The instrument used was a validation sheet containing aspects of the validity of student worksheet accompanied by an assessment rubric.

The validation sheet serves as an assessment sheet to determine the validity of student worksheet based on criteria which include didactic requirements with four sub aspects, construction requirements with eight sub aspects, technical requirements with four sub aspects, and suitability with the role playing model with five sub aspects by the validator consisting of two expert lecturers and one Junior High School science teacher.

The data from the student worksheet validation was analyzed by quantitative descriptive which was then interpreted based on the validator's score in the 1-5 score range. The developed student worksheet based on role playing is declared feasible in terms of validity if the validator's score has a mode ≥ 4. The interpretation of validation assessment scores from the validator can be seen in the following table:

Table 1. Student worksheet validation assessment score

Score	Criteria
5	Very Valid
4	Valid
3	Quite Valid
2	Less Valid
1	Very Invalid

(Riduwan, 2015)

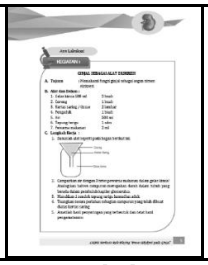
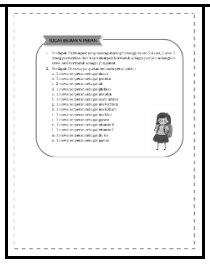
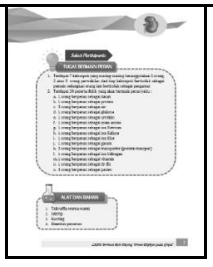
RESULTS AND DISCUSSION

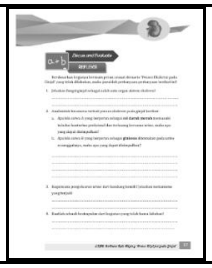
Student worksheet which was developed was integrated with the role playing learning model in the material of the human excretory system. Based suggestions from the adviser, the revised student worksheet was then validated by a validator consisting of two expert lecturers and one science teacher.

Some of the suggestions given by the validator that serve as input for student worksheet improvement are adding mini lab activities sourced from textbooks. This activity serves as a means of students to conduct an investigation related to the initial concept of the material before demonstrating in role playing. The second suggestion is to adjust the role and character with the material concept. It aims to avoid misconceptions and role playing activities can be a visualization for students to analyze the concept of material properly. The third suggestion is to include questions about the analysis related to role playing activities in the discussion. This analysis problem functions so that students can analyze the role playing activities deeper as a result of information processing during the enactment so that they can better understand the concept of the material.

Student worksheet improvements according to the suggestions and input from the validator can be seen in the following table:

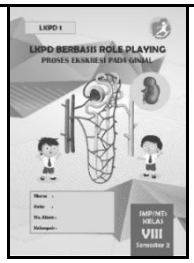
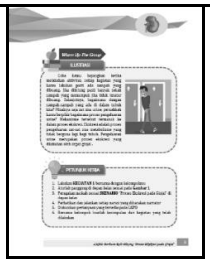
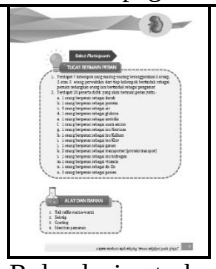
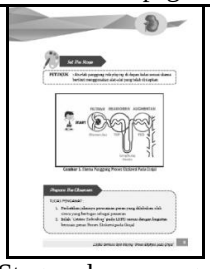
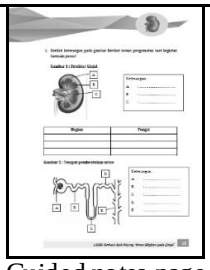
Table 2. Validator's suggestion for student worksheet

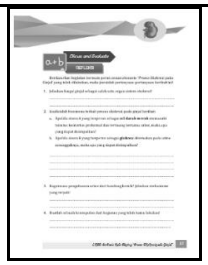
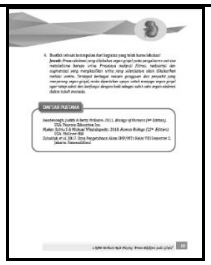
No.	Suggestions	
1.	Add mini lab activities	
	Before revision	**After revision**
		
2.	Adjust the role and enactment with the material concept	
	Before revision	**After revision**
		

3.	Include questions about the analysis related to role playing activities in the discussion	
	Before revision	**After revision**
		

Role playing student worksheet which was compiled has components including: (1) Cover page containing title and identity column, (2) Illustration and instructions for use, (3) Content section consisting of material summary, mini lab activities, role playing tasks, tools and materials, scenarios, guided notes, and reflections, and (4) the reference section is bibliography. The final design results from the preparation of the student worksheet can be seen in the following table:

Table 3. Final design of student worksheet

Role Playing Based Student Worksheet Design	
 Cover page	 Instruction page
 Role playing tasks page	 Stage schemes page
 Scenarios page	 Guided notes page

Role Playing Based Student Worksheet Design	
 Discussion page	 References page

The validity of student worksheet is obtained from the validator's assessment of the didactic, construction and technical requirements and suitability with the role playing learning model. The results of student worksheet validity assessment are presented in the following table:

Table 4. The results of student worksheet validation

Apects	**Assessment Score**			**Mode Score**	**Crite-ria**
	V1	**V2**	**V3**		
Didactic Requirements	4	4	5	4	Valid
Construction Requirements	4	5	4	4	Valid
Technical Requirements	4	5	5	5	Very Valid
Suitability with Role Playing Model	4	5	4	4	Valid

Information:
V1: Validator 1
V2: Validator 2
V3: Validator 3

1. Didactic Requirements

This requirement involve the suitability between the curriculum, material, learning objectives and learning activities contained in the student worksheet. The results of the validation mode score obtained in the didactic requirements is 4 with a valid criteria. The assessment is because the contents of the student worksheet are in conformity with Core Competencies, Basic Competencies, and the needs of students. Prastowo (2015) states that in compiling student worksheet it is important to pay attention to curriculum analysis with the aim that the student worksheet developed is in accordance with competencies, indicators, learning objectives, subject matter, and stages of learning.

The student worksheet material intended is the human excretory system according to Basic Competencies 3.8 and 4.8 of Natural Sciences class in VIII grade. The concept of the link between the structure and function of organs in the excretory system is presented in a role playing scenarios in student worksheet.

Student worksheet which was developed contains features that are adapted to the steps of learning role playing models that have the purpose of

analogy for students to growing motivation to learn on the material of the human excretory system. This is supported by Slàdek Sládek, Milèř, & Benárová (2011) which states that in learning activities it is necessary to set clear goals and support activities as the implementation of the method that used.

2. Construction Requirements

Construction requirements include the use of language and vocabulary, sentence structure, and clarity of student worksheet (Widjajanti, 2008). Based on the results of the validation on the construction requirements including suitability between titles, materials, instructions, activities and discussion questions on student worksheet obtained a score of 4 with valid criteria. This assessment indicates that the systematic preparation of student worksheet is good, which is in accordance with the opinion of Widjajanti (2008), that the order of student worksheet should be in accordance with the level of ability of students. This also relates to the conceptual order in student worksheet which is compiled from simple material to complex material until making conclusions.

Student worksheet also contains instructions and work procedures that are adjusted to the learning objectives so that students more easily participate in learning activities. According to Setiono (2011), the instructions and work procedures in student worksheet are made in such a way with the aim of making students more active. One of them is the role playing activities used by students to learn the concept of the material.

Related to the construction requirements, the use of language in student worksheet is communicative and in accordance with the level of student development. In accordance with National Education Standards Agency, students will more easily understand student worksheet if the use of language is adjusted to the level of thinking (BSNP, 2006). In addition, the availability of sufficient space also supports the feasibility of student worksheet according to the opinion of Salirawati (2004), which states that students can write answers or draw in accordance with the instructions student worksheet must provide enough space or frame.

3. Technical requirements

The results of the validation mode score obtained on the technical requirements is 5 with very valid criteria. The validator's assessment shows that student worksheet's appearance includes the use and selection of letters, sentences, and pictures that have been presented in a consistent, relevant, and balanced manner so that they can be easily understood.

According to Depdiknas (2004), messages or the contents of images must be delivered to users through images in the student worksheet. In addition, every feature in student worksheet has an attractive design icon and appearance. An interesting presentation of writing and drawing can make students motivated and encourage in finding concepts easily during the learning process (Cahyono, 2014).

4. Suitability with Role Playing Model

In the aspect of suitability with the role playing model, the developed student worksheet has fulfilled the characteristics of the role playing based student worksheet including the availability of instructions, schemes and role playing scenarios obtaining a score of 4 with valid criteria. Role playing student worksheet has components including scenarios, guided notes, and group discussions.

According to Putri (2011), the scenarios in student worksheet serves to guide the way of playing roles. Scenarios also act as analogies for students where through this analogy can produce deeper understanding (Aubusson, Fogwill, Barr, & Perkovic 1997). In addition there are guided notes that contain questions that can guide students who served as observers gradually to organize spoken language and movement from role play to written language (Putri, 2011). Furthermore Putri (2011) explained that the group discussion contained questions that were arranged in accordance with learning indicators. Through discussions in student worksheet, students participate in more meaningful discussions, which means they are actively involved in their learning (Çalik, Alipaşa, & Richard, 2010).

The organization of student worksheet is adjusted to the syntax of role playing learning model according to Shaftel & Shaftel in (Joyce & Weil, 2003) which has a connection with the motivational component of the ARCS model according to Keller (2010) which includes: (1) Attention, (2) Relevance, (3) Confidence, and (4) Satisfication. The interrelationship between the role playing model and the motivational component of the ARCS model presented in the student worksheet are listed in **Table 5.** below:

Table 5. The Interrelationship between role playing model and ARCS motivation model component in student worksheet

Role Playing Syntax	Presentation in Student Worksheet	ARCS Motivation Model Component
Warm up the group	There are illustrations that contain the phenomena of daily life as an initial concept to attract students' interest and direction of thinking	Attention, Relevance
Select Participants	There are instructions on role playing tasks that contain instructions on the division of tasks of students as actors according to the scenarios being played	Confidence

Role Playing Syntax	Presentation in Student Worksheet	ARCS Motivation Model Component
Set the stage	There are a role playing stage schemes as a teacher's guide in providing preliminary explanations and instructions regarding the outline of the scenarios	Attention, Relevance
Prepare the observers	There are instructions for students who work as observers in learning activities	Confidence
Enactment	1. There are role playing scenarios that adjusted with material concepts 2. There are guided notes as a guide for students who are tasked as observers of role playing activities	Relevance, Confidence
Discuss and Evaluate	1. There are practice questions as a reflection and evaluation of students' mastery of concepts 2. There are a conclusion making as a follow-up of learning outcomes and sharing experiences between students	Confidence, Satisfication
Share Experiences and Generalize		

Based on the table above, it can be seen that the features in the developed student worksheet have included the four components of motivation according to Keller (2010), so that they can be a medium in growing and maintaining motivation in each component during learning. According to Aisiyah et al. (2018), high learning motivation can have an impact on good learning outcomes.

The developed student worksheet has the aim to increase the motivation and learning outcomes of students. Learning outcomes that are emphasized are the cognitive domain, namely the ability to learn a concept by students expressed in scores through test results (Susanto, 2013). The features in student worksheet that improve cognitive learning outcomes are role selection, stage schemes, scenarios, guided notes and reflection.

In learning to use role playing models, students use student worksheet as a guide that determines the activities carried out so that it affects learning outcomes (Army, Eny, & Rody, 2016). Scenario features in the form of a script that has been adjusted to the material that contains descriptions and dialogue that will be demonstrated by students. According to Bakırcı, Bilgin, & Şimşek (2011), simulation activities using these scenarios contribute to the development of scientific processes, hypothetical thinking, and students' analytical skills. In addition, the visualization process in a simulation can allow students to make predictions about how the process and system in a concept can develop (Dorion, 2009).

The active involvement of students in learning science using role playing causes them to develop their knowledge (Craciun, 2010). According to Aubusson et al. (1997), in learning using role playing students not only pay attention to what is taught to them but are actively involved in interpreting information. In this way, role playing is used as an analogy to enable students to produce deeper understanding. The features contained in student worksheet also have function as visual stimulus, where the excretory system material is one material that has an abstract concept so according to Schunk (2012), students need the stimulus in order to save the concepts learned to long-term memory.

CLOSING

Conclusion

Based on the results of the validator assessment mode scores on aspects of didactic requirements, construction requirements, technical requirements and suitability with role playing models of 4 with valid criteria, it can be concluded that student worksheet based on role playing in the material of the human excretory system to increase motivation and learning outcomes that are developed appropriately in terms of validity so it's valid to be tested.

Suggestion

1. In future research, it is expected that this role playing based student worksheet can be developed in other material not limited to the material of the human excretory system.
2. In the next research it is expected that researchers pay more attention to the allocation of time in developing scenarios on student worksheet so that role playing activities can run more effectively.

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