Development of Participatory-Reflective Instrument in the Evaluation of Physical Education Learning: Utilizing the Educational Tricider Platform

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Abstract. This study aims to develop a participatory instrument based on self-reflection in evaluating physical education learning that utilizes digital tricider education media in its implementation. The development of participatory instruments based on self-reflection helps the qualitative evaluation process in the form of stories about learning participation in the process and results as well as improving physical education learning which needs to be done as a process of self-reflection. Tricider is a tool that is very easy to ask for knowledge, discussion and feedback on learning topics, so researchers utilize digital tricider tools in developing this instrument. The process of developing this participatory instrument uses the R2D2 model (Recursive, Reflective, design and development). This model has three work focuses, namely (1) Determination, (2) Design and Development, and (3) dissemination. In each of these focuses there are details of activities that must be carried out by researchers recursively, nonlinearly, reflectively and participatively. The population and sample in this development study were students of S1 Physical Education, Health and Recreation and S2 Physical Education, Faculty of Teacher Training and Education, Singaperbangsa University, Karawang using the snowball sampling technique. From the results of the test data analysis of the instrument, it can be concluded that the reflective participatory instrument can measure the level of participation and reflection on the results of Physical Education learning. The population and sample in this development study were students of S1 Physical Education, Health and Recreation and S2 Physical Education, Faculty of Teacher Training and Education, Singaperbangsa University, Karawang using the snowball sampling technique. From the results of the test data analysis of the instrument, it can be concluded that the reflective participatory instrument can measure the level of participation and reflection on the results of Physical Education learning.

Keywords: Participatory, Reflective, Learning Evaluation, Physical Education, Tricider.

1   Introduction

Assessment is used to monitor the process of progress and development of student learning outcomes in accordance with their potential, as well as feedback to the teacher in order to improve lesson plans [1]. From this statement it turns out that most students have learning problems which are known from the results of the assessment have not been used as material for reflection. Self-reflection can obtain information about the results of the learning process, the weaknesses and strengths of the student learning process, which makes the learning improvement process obtained from self-assessment.

This study aims to develop participatory instruments [2] based on self-reflection in the evaluation of sports and health education that utilizes digital tricider education media in its implementation. The development of participatory instruments based on self-reflection helps the process of evaluating physical education learning with a qualitative evaluation approach in the form of participatory learning stories in the process and results as well as improving physical education learning which needs to be done as a process of self-reflection [3].

Explained by [4] that the assessment can be used to monitor the process of progress and development of student learning outcomes according to their potential, as well as at the same time as feedback to teachers so they can improve lesson planning. Moreover, the assessment can be carried out for various purposes. [5] mention in full the purpose of the assessment, including (1) to find out the level of mastery of students towards the material that has been given; (2) to determine the skills, motivation, talents, interests, and attitudes of students towards learning programs 3) to determine the level of progress and suitability of student learning outcomes with competency standards and basic competencies that have been set; (4) to diagnose students' strengths and weaknesses in participating in learning activities; (5) for selection, namely choosing and determining students who are suitable for certain types of education; (6) to place students according to their potential; and (7) to determine class increase.

According to [6], The learning participation of students who use face-to-face classical classes generally tends to be dominated by active students only. While students who are less active even tend to be passive, participation in class is not visible. So that the discussion forum in e-learning is a solution that can increase student/student learning participation in online classes. Learning participation or in simple language is one's participation in learning. According to learning participation is the participation of someone to do or take part of something that must be done by the perpetrator. This shows that learning participation is participation, in this case, students want to be involved in learning [7]. Participation is the involvement of a person or several people in an activity, both in the form of mental and emotional and physical involvement in using all the capabilities they have (take the initiative) in all activities carried out and responsibility for all involvement [8]. Support the achievement of goals and Participation is measured by how much involvement of members in group activities.

According to Bowman, self-reflection is one of the main aspects of determining abilities and skills, in [9]. Reflecting on ability practices, especially in learning, is an important factor for the formation of innovation and learning revolution among students in the classroom [10].

Tricider is a very easy tool for asking for knowledge, discussion and feedback on learning topics, so researchers utilize digital tricider tools in developing this instrument.

Therefore, students can continue to improve themselves from the quality of learning to achieve learning goals from the affective, cognitive and psychomotor domains. Therefore, research on the development of participatory reflective instruments to evaluate physical education learning was carried out by utilizing the educational tricider platform.

2   Method

This study uses development research methods, the model used is the R2D2 development model [11]. (Recursive, reflective, design and development) which has three work focuses, namely (1) Determination, (2) Design and Development, and (3) dissemination. The three principles in R2D2 are:

- The principle of recursion (recursion) is a principle that requires researchers to make temporary penances and decisions.
- The Principle of Reflection (Reflexive) is a principle that requires researchers to reflect on design and development.
- The Participatory Principle is a principle that requires researchers to invite other people to participate in research.
- The instrument used in this development research is a list of interviews to obtain information on the feasibility and suitability of reflective participatory instruments.

Research and development or research and development is a process or steps to develop new products or improve existing products in an accountable way. Reinforces that research and development methods are used to produce certain products and test the effectiveness of these products. Research and development of this reflective-based participatory instrument uses a development research method with the type of R2D2 development model (recursive, reflective, design and development). [12] Outline put forward three basic principles of R2D2, namely recursion, reflection, and participation. There were five product trials carried out, namely (1) trial design; (2) data subject; (3) data type; (4) data collection instruments; and (5) data analysis techniques. Development of this reflection-based participatory instrument has three work focuses, namely (1) determination, (2) reflection/design and development, and (3) dissemination. In each of these focuses there are details of activities that must be carried out by researchers in a recursive, nonlinear, reflective, and participatory manner. Fig. 1. R2D2 Development Research Flowchart.
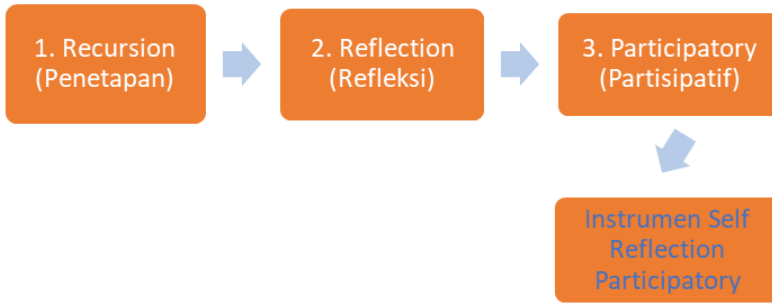
Fig. 1. R2D2 Development Research Flowchart

3   Result and Discussion

3.1   Recursion Principle

The researcher determines the decision in developing the instrument with the concept of development carried out, namely an instrument that gives flexibility to students to talk about what has been obtained from their learning outcomes. In this stage the researcher has made decisions in developing a reflective-based participatory instrument for evaluating physical education learning with a qualitative approach. The concept development carried out is an instrument that provides flexibility for students to talk about what they have obtained from the learning process on the basis of participatory concepts and reflective concepts. Participation is the involvement of a person or several people in an activity, both in the form of mental and emotional as well as physical involvement in using all the capabilities they have (take the initiative) in all activities carried out and responsibility for all involvement, [4]. Support the achievement of goals and Participation is measured by how much involvement of members in group activities. Participation in the concept of developing this instrument is a student involvement in the assessment of learning outcomes that they have done, in terms of: a) learning evaluation planning, b) implementing learning evaluation, c) reflecting on the results of learning evaluation. The concept of Reflection can be used as the main literature of students in developing new strategies in solving process problems and learning outcomes which become a reference for obtaining solutions to develop themselves to be more capable and skilled in learning, [5]. There are 4 aspects which are the focus of student reflection in learning practices, namely: (1) Environment, this refers to how students can utilize the learning environment in developing their abilities; (2) Learning behavior, such as a positive response to change or innovation; (3) Competence, especially the response to the importance of improving learning outcomes; and (4) students' beliefs, beliefs about their abilities. this refers to how students can take advantage of the learning environment in developing their abilities; (2) Learning behavior, such as a positive response to change or innovation; (3) Competence, especially the response to the importance of improving learning outcomes; and (4) students' beliefs, beliefs about their abilities. this refers to how students can take advantage of the learning environment in developing

their abilities; (2) Learning behavior, such as a positive response to change or innovation; (3) Competence, especially the response to the importance of improving learning outcomes; and (4) students' beliefs, beliefs about their abilities.

[6] the researcher drafted an instrument that was developed based on participatory and reflective concepts into several questions from aspects of the affective, cognitive and psychomotor domains with 4 questions each with the draft instrument as follows: Then the Participatory Reflective Evaluation Instrument

How to fill in. Participatory Evaluation Approach - Reflective is carried out after students have carried out the learning process, especially in physical education. This evaluation approach is narrative with storytelling techniques. There are three domains of learning outcomes stories, namely behavior (affective), knowledge (cognitive) and skills (psychomotor) which can be expressed by students/students as a result of their participation and self-reflection in the learning carried out. Tell the learning outcomes that are felt as a result of the learning process that has taken place according to the basic competencies / learning outcomes that have been determined.

Assessment. In this participatory evaluation approach, in addition to filling in stories of participation in the process and results of physical education learning students can also be involved as evaluators to participate in assessing the stories of their peers from the results of the stories with visible realizations, then the final assessment is verified by the teacher.

The story topic presented in Table 1, followed by Participatory-Reflective Instrument Research Rubric which presented in Table 2-6.

Table 1. Story Topic (Competencies/Learning Outcomes)

No	Story Aspect	Participatory-Reflective Story
1	Is there a change in positive attitude that is felt from the process of learning the material...? Tell me	
2	What behaviors do you always show in the learning process as a form of personal good habit? Tell me!	
3	Do you have bad behavior that is often shown, so that it can hinder the optimal learning process? Tell me!	
4	How do you try to minimize bad behavior that often appears and hinders the learning process and your learning outcomes? Tell me!	
5	How is your understanding in the process of learning competency material .... provide a detailed description with the substance of the material! Tell me!	
6	What have you mastered from the competency material? Tell me!	
7	Is there material from these competencies that you have not mastered? Tell me!	
8	What are you going to do to improve competency material that has not been mastered, in order to improve	
9	What have you done in learning competency material .... can you follow the skills (movement) in the material well? Tell me!	
10	What skills have you mastered from that lesson, how do you master them? Tell me!	

| 11 | Are there skills (movement) that you have not mastered, what are the obstacles to mastering these material skills? Tell me! |
| 12 | What are your motion learning strategies to master these skills? Tell me! |

Table 2. Participatory-Reflective Instrument Research Rubric Attitude Aspect

Indicator	Score	Criteria
Always telling stories Honest in expressing the learning outcomes experienced in accordance with reality	4	SB
Often telling stories Honest in expressing the learning outcomes experienced in accordance with reality	3	B
Sometimes telling stories Honestly in expressing the learning outcomes experienced in accordance with reality	2	CB
Never tell stories. Be honest in expressing the learning outcomes experienced in accordance with reality	1	KB

Table 3. Participatory-Reflective Instrument Research Rubric Knowledge Aspect

Indicator	Score	Criteria
Stories contain a lot of material content that is carried out and a very strong intention to make changes to increase competence	4	SB
The story contains a lot of material content that is carried out and a strong intention to make changes to increase competence	3	B
The story contains quite a lot of material content that is carried out and a strong enough intention to make changes to increase competence	2	CB
The story contains less material content that is carried out and less strong intentions to make changes to increase competence	1	KB

Table 4. Participatory-Reflective Instrument Research Rubric Skill Aspect

Indicator	Score	Criteria
The story contains a lot of motion skills that are carried out and a very strong intention to make changes to increase skill competency	4	SB
The story contains a lot of movement skills that are performed and a strong intention to make changes to improve skill competence	3	B
The story contains quite a lot of movement skills that are carried out and a strong enough intention to make changes to increase skill competence	2	CB

| The story contains less movement skills that are carried out and less strong intentions to make changes to increase skill competency | 1 | KB |

Calculation Formulas
SP
Value = ___ x 100
BC
Information
SP : Gain Score
SM: Maximum Score
BC = 12 x 4 = 48

From the decision to determine the draft for the development of a participatory and reflective based evaluation instrument, the researcher then carried out the next stage, namely reflecting on the draft instrument that had been made.

Table 5. Participatory-Reflective Instrument Research Rubric Attitude Aspect

Indicator	Score	Criteria
Stories express feelings and behaviors that are always positive in learning participation	4	SB
Stories reveal positive feelings and behaviors in participating in learning	3	B
Stories reveal feelings and behaviors that are quite positive in the learning participation that is carried out	2	CB
Stories reveal feelings and behaviors that are less positive in learning participation	1	KB

Table 6. Participatory-Reflective Instrument Research Rubric Knowledge Aspect

Indicator	Score	Criteria
Stories contain a lot of material content that is carried out and a very strong intention to make changes to increase competence	4	SB
The story contains a lot of material content that is carried out and a strong intention to make changes to increase competence	3	B
The story contains quite a lot of material content that is carried out and a strong enough intention to make changes to increase competence	2	CB
The story contains less material content that is carried out and less strong intentions to make changes to increase competence	1	KB

3.2 Reflection Principle

The review phase of the instrument draft that has been decided by the researcher, by utilizing educational tricider platform technology.

After designing the draft instrument that was developed as an initial decision making, the researcher then carried out the reflection stage which was the stage of reviewing the draft instrument that had been decided. Found things that need to be added from the results of re-thinking about the perfection of participatory reflective evaluation instruments as follows:

1. Adding an instrument grid as a basis for strengthening the existing participatory and reflective basic constructs in instrument development Adding a scoring rubric for peer assessors from the form of observing friends' participation. The evaluation instrument grid reflective participation is presented in Table 7.

Table 7. Evaluation Instrument Grid Reflective Participation

Variable	Sub Variable	Indicator	Sub-Indicators	Evaluation Realm
Reflective Participatory Instruments	participatory	Participation Planning	Determining Friend Ratings	Affective Psychomotor Cognitive
		Participation in carrying out evaluation and self-reflection of learning outcomes	Talking about self-involvement in learning	
	Self reflection	Competency introspection	Telling what has been understood from the material obtained	
		Self confidence	Telling what has been mastered from the learning process	
		Learning Behavior	Telling the attitude shown in the learning process	
		Environmental Utilization	Tells how to improve yourself from learning outcomes	

2. The problem that often occurs in the evaluation of physical education learning, sports and health physical education teachers (PJOK) experience time problems in carrying

out and assessing student evaluations, so that in the development of this reflective participatory instrument, assignments can be made to be done at home and then collected the next day . Then this instrument is made of peer assessment, so as to maximize the participation of students in social interaction in learning, namely assessing the learning outcomes of themselves and their friends. This peer assessment can assist teachers in carrying out measurements and assessments of learning outcomes, especially physical education. the teacher can verify again from the results of peer assessment. The evaluation instrument grid reflective participation is presented in Table 8.

Table 8. Evaluation Instrument Grid

No	Aspect	Item No	Scale				Score	Information
			1	2	3	4		
1.	Affective	1						
		2						
		3						
		4						
2.	cognitive	5						
		6						
		7						
		8						
3.	Psychomotor	9						
		10						
		11						
		12						
Total Score								

3.3   Participatory Principles

The researchers invited other people to participate in his research, namely instrument experts from academics and practitioners from physical education teachers as well as instrument trials on students. In the participatory stage or participation from other parties, namely by instrument experts from academics, namely Dr. Febi Kurniawan, S.Pd. Kor., M. Or. from the Health and Recreation Physical Education Study Program, Faculty of Teacher Training and Education, Singaperbangsa University, Karawang. Then the physical education learning expert by Dr. Dewi Susilowati, M.Pd. academics from the UPI Sumedang Postgraduate Physical Education Study Program. Meanwhile, from practitioners, namely Nuryasin, M.Pd. West Karawang SMPN 7 teacher and Rita Safitri, S.Pd., PJOK teacher at SMAN 1 Pangkalan.

Experts participate in providing input on the instruments developed by researchers, so that some input is obtained for improvement that needs to be revised, namely as follows:

- The question sentences on the instrument are made simpler so that they can be understood and more understood by students to answer. Sentences used in participatory - reflective instruments seem to use language that is too standard.

- In order to be more in touch with the element of self-reflection, assessment of the story of the process and learning outcomes can be assessed by the students concerned, which can then be verified by colleagues and teachers.
- This reflective participatory instrument is story based, with 12 instrument items being analyzed too much for students, the researcher can condense or summarize the instrument items without reducing the participative and self-reflective elements, so that students focus more on a more detailed story if the number of instruments is less.
- There are no assessment criteria in the instrument.

Following are the results of the Participatory Reflective instrument which have been revised according to input from experts. Reflective Participatory Evaluation Instrument

How to fill in: Participatory Evaluation Approach - Reflective is carried out after students carry out the physical education lecture process. This evaluation approach is narrative with storytelling techniques. There are three domains of learning outcomes stories, namely behavior (affective), knowledge (cognitive) and skills (psychomotor) which students can put forward as a result of their participation and self-reflection in the learning being carried out. Tell the learning outcomes that are felt as a result of the learning/lecture process that has taken place according to the specified basic competencies/learning outcomes.

Assessment: In this participatory evaluation approach, apart from filling in the stories of participation in the process and results of evaluating physical education learning students/students can also be involved as evaluators to participate in assessing the stories of their peers from the results of the stories with visible realization, then the final assessment is verified by the teacher/lecturer. The reflective participatory evaluation instrument is presented in Table 9, followed by participatory-reflective instrument assessment which presented in Table 10-13.

Table 9. Reflective Participatory Evaluation Instrument

Story Topic (Competencies/Learning Outcomes): …………………………….
Name: ....
Class: ....

Story Topic (Competencies/Learning Outcomes): …………………………….
Name: ....
Class: ....

No	Story Aspect	Participatory-Reflective Story	Writing
1	Tell me, what positive attitude did you get from the learning outcomes?		
2	Tell me, what problems do you feel in the process that can hinder learning … and what are the solutions to overcome them?		
3	Tell me, what have you understood from the learning materials...?		
4	Tell me, what problems are encountered in Learning … and what is your solution to overcome this?		

| 5 | Tell me, what have you mastered in learning skills….? |
| 6 | Tell me, what are the obstacles you experience in mastering learning skills… and what are the solutions to overcome these obstacles? |

Table 10. Participatory-Reflective Instrument Assessment Attitude Aspect

Indicator	Score	Criteria
Stories express feelings and behaviors that are always positive in learning participation	4	SB
Stories reveal positive feelings and behaviors in participating in learning	3	B
Stories reveal feelings and behaviors that are quite positive in the learning participation that is carried out	2	CB
Stories reveal feelings and behaviors that are less positive in learning participation	1	KB

Table 11. Participatory-Reflective Instrument Assessment Knowledge Aspect

Indicator	Score	Criteria
Stories contain a lot of material content that is carried out and a very strong intention to make changes to increase competence	4	SB
The story contains a lot of material content that is carried out and a strong intention to make changes to increase competence	3	B
The story contains quite a lot of material content that is carried out and a strong enough intention to make changes to increase competence	2	CB
The story contains less material content that is carried out and less strong intentions to make changes to increase competence	1	KB

Table 12. Participatory-Reflective Instrument Assessment Skill Aspect

Indicator	Score	Criteria
The story contains a lot of skills that are carried out as well as a very strong intention to make changes to increase skill competence	4	SB
The story contains many skills performed as well as a strong intention to make changes to increase skill competency	3	B
The story contains quite a lot of skills that are carried out and intentions that are strong enough to make changes to increase skill competence	2	CB
The story contains less skills that are carried out and less strong intentions to make changes to increase skill competence	1	KB

Calculation Formulas
 SP
Value = ___ x 100 = ...
 BC
Information
SP : Gain Score
SM: Maximum Score
BC = 6 x 4 = 24

Table 13. Reflective Participatory Instrument Assessment Criteria

Conversion Rate	Quality Letters	Information
100-91	SB	Very Well Participated
90-81	B	Participate properly
80-71	CB	Participated pretty well
70-61	KB	Participates Less Well

3.4   Development Results

Researchers produce participatory reflective instruments in the evaluation of physical education learning: Utilizing appropriate and valid educational tricider platforms.

4   Ultilization of Tricider Platforms

After making the instrument, you can take advantage of the tricider platform to ask for knowledge, discussion, and feedback on learning topics. This platform is used as a learning evaluation with displays and features that are easy to understand. Appearance Tricider Platforms can be seen in Fig. 2.
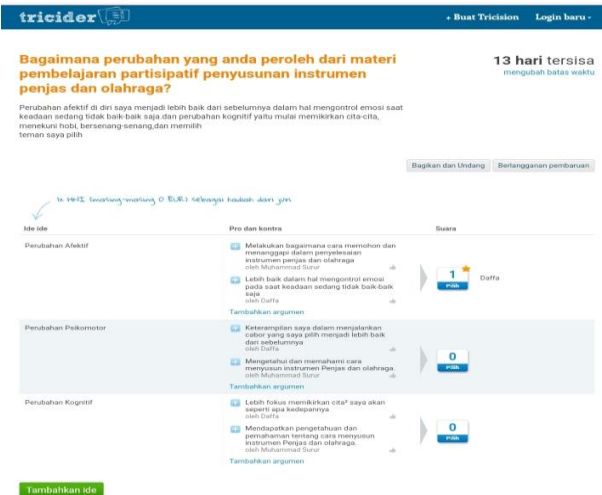
Fig. 2. Appearance Tricider Platforms

5   Conclusion

It can be concluded that the development of participatory reflective instruments by utilizing the triside education platform can measure the level of student participation and reflection in physical education learning.

Acknowledgments. Based on the affirmation of research, researchers produceparticipatory reflective instrument in the evaluation of physical education learning by utilizing an appropriate and valid educational tricider platform. The goalsThis research is to develop participatory instruments based on self-reflection in the evaluation of Physical Education learning that utilizes digital tricider education media in its implementation. The development of participatory instruments based on self-reflection helps the process of evaluating physical education learning with a qualitative evaluation approach in the form of participatory learning stories in the process and results as well as improving physical education learning which needs to be done as a process of self-reflection.

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