

## Development of Science Learning Student Worksheet Based on Quranic 7E Learning Cycle for Class VIII Integrated Islamic School



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**ABSTRACT:** The learning process in schools has used a scientific learning model but not yet maximal, because each learning model has a different syntax so that teachers have difficulty remembering one by one the synths, then there needs to be the help of teaching materials such as student worksheet. The purpose of this research is to produce student worksheet science learning based on quran-minded 7E learning cycle for students of class VIII integrated islamic school Qurrata A'yun Batusangkar valid, practical and effective. This research is a development research using the Plomp model consisting of the initial investigation, development and assessment. The instruments used are validity assessment sheets, practicality assessment sheets by teachers and learners, observation sheets to observe and assess the learning outcomes of attitude aspects, daily assessment sheets in the form of multiple choice questions to assess the learning outcomes of knowledge aspects and project sheets to assess the learning outcomes of aspects of skills. The results showed that LKPD learning IPA based on the Quranic 7E learning cycle at a validator assessment with a value of 87.31% criteria is very valid. The results of practical assessment by teachers showed a value of 90.83% with very practical criteria and practicality test results by learners showed a value of 87.53% with very practical criteria. Effectiveness test results show an increase in learning outcomes in aspects of learners' knowledge, attitudes and skills.

**KEYWORDS:** Development, Student Worksheets, Learning Cycle 7E, Quran-Minded.

### I. INTRODUCTION

Education is the most important aspect to improve the quality of human resources. Education as a process that society builds to bring a new generation towards quality progress. Improving the quality of the learning process is characterized by increasing learners' learning outcomes in the learning process. The learning process carried out in the classroom by teachers by using scientific learning models but has not been maximal and has not varied, it is because in each learning model used has many steps so that teachers have difficulty remembering one by one the learning model used. With the difficulty to remember the synth of learning then there needs to be help teaching materials. One of the teaching materials that are often used is the student worksheet.

Student worksheet is a collection of teaching materials that have been packaged in such a way, so that learners are expected to learn the teaching material. The existence of student worksheet can help facilitate teachers in carrying out the learning process, because in student worksheet contains structured materials, summaries, and tasks related to the subject matter [2]. This is where the role of the teacher as a facilitator is to facilitate learners to learn by preparing student worksheet designed by the teacher. Student worksheet can also help teachers implement a learning model.

One of the learning models is the learning cycle. The learning cycle is learning with stages arranged in such a way that learners can master the competencies that must be achieved by participating in an active role [3]. The development of this learning model already has seven phases so it is known as the 7E learning cycle.

The 7E learning cycle is a learning model using a constructivism approach that is a student-centered approach, how learners can build their own knowledge through active involvement in the learning process. The 7E learning cycle connects initial knowledge to form new knowledge through seven interrelated stages, making it easy for learners to understand the concepts learned and apply in everyday life.

The 7E learning cycle has seven learning phases namely elicit (bringing in initial knowledge), engage (motivate), explore (investigate), explain (explain), elaborate (apply), evaluate (assess), and extend (expand) that can be seen in Table 1.

Each stage of 7E learning cycle encourages learners to develop their thinking skills, so it is expected that learning outcomes and student achievement will increase [5]. The 7E learning cycle model is expected to create an innovative, constructive, and fun learning atmosphere so that learners are motivated to be actively involved in following the learning activity process in hopes of improving learners' learning outcomes [6].

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Table 1. Stages and Activity on 7E Learning Cycle

No	Stages	Activity
1	<i>Elicit</i> (bringing in initial knowledge)	Fundamental questions related to the material to be studied to find out the initial knowledge of learners.
2	<i>Engage</i> (motivate)	Articles and activities that cause curiosity or curiosity and students' learning interest in the material to be studied.
3	<i>Explore</i> (investigate),	Investigative activities either observation, experimenting, and collecting or digging for information related to learning materials.
4	<i>Explain</i> (explain),	Activities explain the concepts and definitions related to the material resulting from the investigation / collection of information.
5	<i>Elaborate</i> (apply),	Questions and problems related to examples of concepts learned to apply the concepts that have been obtained by learners
6	<i>Evaluate</i> (assess)	Questions to evaluate learning with learning indicators
7	<i>Extend</i> (expand)	Expand the concepts that have been obtained by learners, so that learners can look for relationships of other concepts that have been or have not been studied

The Qur'an is a holy book that has many dimensions and insights. The Qur'an also plays a major role in the context of the development of science, especially Islamic science. The Qur'an proves it self to be a comprehensive miracle because it remains relevant to the latest developments that man kind has achieved in the era of science and reason. Although the Qur'an is essentially a religious book, the study and content of its contents is not limited to the religious field only. It also covers various aspects of human life such as science [7].

Learners must also understand that in the Qur'an there are general principles and principles about science and natural sciences that have been poured into the learning material. LKPD based on the quran-minded 7E learning cycle is a source of learning and learning materials that pour thoughts contained in the Qur'an through the process of education in schools as an effort to prepare learners who are ready to face the times because they have been equipped with science and general science and spiritual and religious values that are useful for him to live in the world and the hereafter.

## II. RESEARCH METHODS

This type of research is research and development. Research and development is a scientific way to research, design, manufacture and test products that have been produced. Development research is conducted to develop a product that is valid, practical and effective. The purpose of this research is to produce students worksheet in the learning process that will be utilized by learners and teachers.

The development model used in this research is the Plomp development model consisting of three stages, namely: the first stage of preliminary research phase, activities carried out at this stage, namely problem analysis, needs analysis, curriculum analysis and concept analysis. The second phase of prototype development (development or prototyping phase) consists of prototype 1, prototype 2, prototype 3 and prototype 4, then the third stage is assessment (assessment phase). The population in this study was a student of class VIII SMPIT Qurrata A'yun Batusangkar school year 2021/2022.

## III. RESULTS AND DISCUSSION

The development of student worksheets based on the Quran-minded 7E learning cycle for students of class VIII integrated islamic school Qurrata A'yun Batusangkar through a series of processes. The process goes through the research stages that exist in development research. This development research consists of three stages, namely the preliminary research phase, the prototype development (development or prototyping phase) and the assessment phase. Student worksheets is developed with several revisions, the result of which is a valid, practical and effective product. To get a good product can be determined by an assessment of validity, practicality and effectiveness [9].

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The validation process involves 4 lecturers as validators (expert reviews), in accordance with Arikunto's opinion that if the data generated from a valid product, it can be said that the product can already provide an overview of its development goals in accordance with the actual circumstances [10]. Student worksheets is assessed from 3 aspects, namely didactic, construct and technical aspects. Based on expert validation results obtained an average of 87.31% with a very valid category.

**Table 2. Validity Results by Experts**

No	Aspect	Score	Category
1	Didactic aspect	90.06%	Very valid
2	Construct aspect	84.37%	Very valid
3	Technical aspect	87.50%	Very valid
	<b>Average</b>	<b>87.31%</b>	Very valid

On the practical aspect, Nieveen in Plomp states that practicality for the quality of a good product refers to the intervention of products developed and considered for use by teachers and learners as users and provides convenience for them. Practicality can be seen from the aspect of attractiveness, the best implementation time is short, fast and precise [11]. Practical assessment is carried out by teachers and learners. The practical assessment of students worksheets science based on the Quranic 7E learning cycle is carried out gradually. starting from one-on-one evaluation, small group, large group and assessment by teacher.

**Table 3. Results of the Practicality on Small Group Assessment**

No	Aspect	Score	Category
1	Ease of use	94,44 %	Very practical
2	Efficiency of use	93,75 %	Very practical
3	Attraction	87,50 %	Very practical
4	Easy to interpret	95,83 %	Very practical
5.	Have equivalence	97,91 %	Very practical
	<b>Average</b>	<b>93,88 %</b>	<b>Very practical</b>

Based on Table 3 above can be known the results of practical assessment by a small group in terms of ease of use, efficiency of use, attractiveness, easy to interpret and have equivalence, obtained an average of practicality of 93.88% with a very practical category.

**Table 4. Results of Practicality Assessment of Student Worksheets by Teacher.**

No	Aspect	Score		Category
		Teacher	Field test	
1	Ease of use	87,50%	89,06%	Very practical
2	Efficiency of use	87,50%	85,93%	Very practical
3	Attraction	91,67%	85,93%	Very practical
4	Easy to interpret	87,50%	86,11%	Very practical
5.	Have equivalence	100%	90,62%	Very practical
	<b>Average</b>	<b>90,83%</b>	<b>87,53%</b>	<b>Very practical</b>

Based on Table 4 above can be known the results of practical assessment by teachers in terms of ease of use, efficiency of use, attractiveness, easy to interpret and have equivalence, obtained an average of practicality of 87.53% with a very practical category.

After a validity test by experts and a practicality test by teachers and learners, then an effectiveness test is carried out. This effectiveness test is conducted to find out whether the science student worksheets based on the Quran-minded 7E learning cycle developed is feasible or not used as teaching material in the learning process. The material taught in this study is motion in living things as well as the structure and function of plant tissues. This was done in eight meetings.

The 7E learning cycle is a learning model using a constructivism approach that is a student-centered approach, how learners can build their own knowledge through active involvement in the learning process [12]. The 7E learning cycle learning model connects learners' initial knowledge to form new knowledge through seven interrelated stages, this making learners easily understand the concepts learned, can apply in everyday life [13].

The 7E learning model supported by metacognitive strategies has a significantly superior effect over other learning methods to improve students' conceptual understanding and minimize misconceptions in learning [14]. Learning materials compiled with the

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7E model supported by teaching materials and multimedia have a positive effect on learning outcomes and the information learned is easier to remember [15].

The insight of the Qur'an means a set of thoughts contained in the Qur'an that hints at the transformation of the values of the Qur'an through the process of education in systematic and conscious sciences learning in an effort to prepare learners to be ready for the development of the times that will lead to the benefit of life in the world and the hereafter. Learning using student worksheets helps learners find concepts through their own activities or groups that make learning more meaningful both in terms of science material and islamic religious values contained in it [16].

Student worksheets uses the 7E learning cycle model equipped with quranic verse content that is in accordance with the material studied, learners are directed to study and understand the problems presented to be able to find solutions. More often learners repeat learning based on the 7E learning cycle with the insight of the Quran is expected learners to find the meaning of the knowledge learned. By reading the Quran before learning will increase the clarity of the heart and concentration of learners during learning [17]. The Qur'an proves itself to be a comprehensive miracle because it remains relevant to the cutting-edge developments that mankind has achieved in the era of science and reason.

**Table 5. Results of Science Student Worksheets Statistics Test Based on 7E Learning Cycle with Quran-Minded on Aspects of Knowledge.**

No	Parameter	Control		Eksperiments		Statement
		Motion	Structure	Motion	Structure	
1.	Average	73.02	73.00	79.52	78.08	Eksperiments > Control
2.	Normality Test	0.106	0.148	0.153	0.148	Normal Distributed
3.	Homogeneity Test	1.12	1.48	1.12	1.48	Homogeneous
4.	Hypothesis Test	3.201	2.163	3.201	2.163	Accepted hypothesis

Based on Table 5, it is known that the average experimental grade score is higher than the control class. Normality tests show that learning outcomes aspects of learners' knowledge are normally distributed. Test homogeneity aspects of knowledge of learners of motion matter in living things and the structure and function of plants have homogeneous variants. The hypothesis test states that the accepted hypothesis means that there is a significant difference between the learning outcome aspects of the study aspect of the experimental class learners and the control class.

**Table 6. Results of Science Student Worksheets Statistics Test Based on 7E Learning Cycle With Quran-Minded on Attitude Aspects.**

No	Parameter	Kontrol		Eksperiments		Statement
		Motion	Structure	Motion	Structure	
1.	Average	75.86	75.71	84.59	83.36	Eksperiments > Control
2.	Hypothesis Test	4.91	4.88	4.91	4.88	Accepted hypothesis

Based on Table 6, the average learning outcome aspect of the attitude of the experimental class learners is higher than the control class. The hypothesis test states that the accepted hypothesis means that there is a significant difference between the learning outcome aspects of peerta didik's attitude to the experimental class and the control class.

**Table 7. Results of Science Student Worksheets Statistics Test Based on 7E Learning Cycle With Quran-Minded on Aspects of Skills.**

No	Parameter	Control		Eksperiments		Statement
		Motion	Structure	Motion	Structure	
1.	Average	80.92	82.17	84.86	84.88	Eksperiments > Control
2.	Normality Test	0.137	0.137	0.148	0.131	Normal Distributed
3.	Homogeneity Test	1.04	1.36	1.04	1.36	Homogeneous
4.	Hypothesis Test	3.99	2.75	3.99	2.75	Accepted hypothesis

Based on Table 7, it is known that the average grade of the experiment is higher than the control class. Normality tests show that learning outcomes of learners' skill aspects are normally distributed. Test homogeneity aspects of the skill of motion material learners in living things and the structure and function of plants have homogeneous variants. The hypothesis test states that the accepted hypothesis means that there is a significant difference between the learning outcome of the skills aspects of the experimental class learners and the control class.

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## IV. CONCLUSION

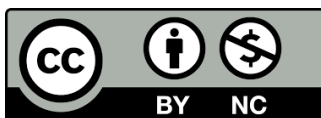
Based on the results of research and testing of science student worksheets based on Quranic learning cycle 7E for students of class VIII integrates Islamic school Qurrata A'yun Batusangkar that has been conducted, it can be concluded that LKPD Validation is assessed based on expert / validator assessments assessed based on didactic, constructed and technical aspects with an average of 87.31% criteria are very valid.

The results of practicality tests showed that LKPD IPA Based learning cycle 7E insights qur'an reviewed from ease of use, efficiency of use, attractiveness, easy to interpret and have equivalence based on teacher assessment obtained an average of 90.83% very practical category and from the assessment of learners obtained an average of 87.53% with very practical categories.

The results of the effectiveness test showed that LKPD IPA based on the 7E learning cycle with the quran's insightful material movement in living things and plant structures and functions that have been developed have effectiveness with highly effective categories through the assessment of learners' learning outcomes on competence of knowledge, attitudes and skills.

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