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The Development Of Evaluation Instruments To Measure Student Creativity

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Abstract:
This research aims to obtain results from developing reliable evaluation instruments to determine the feasibility and effectiveness of evaluation instruments for measuring student creativity in mathematics instructional media courses. This evaluation instrument is used by lecturers when giving Mathematics Instructional Media courses at the Mathematics Education Study Program, PGRI Jombang University, Wahidiyah University Kediri, and Majapahit Islamic University Mojokerto. The method used in this research is R&D, with the ADDIE (Analyze, Design, Develop, Implement, Evaluate) development model. The research instruments used were observation guidelines for Semester Learning Plans and the learning process for mathematics instructional media courses, interview guidelines for lecturers in charge of mathematics instructional media courses, and feasibility assessment questionnaires from instrument experts and creativity experts. Lecturers who have expertise in the field of evaluation and creativity have assessed and agreed that the prototype of the evaluation instrument developed meets the required standards or criteria. Experts stated that the instrument was reliable and suitable for use in the context of evaluating student creativity. Data from testing results on the validity and reliability of the creativity evaluation instrument tested on 32 students showed a Cronbach's Alpha value of 0.870 > 0.8, which means the creativity evaluation instrument met the reliability requirements with a high level of reliability. Meanwhile, the Pearson correlation value (r) between each item and the total score ranges from 0.466 to 0.788, all greater than 0.349. This shows that all items meet the validity criteria. The results of applying the evaluation instrument to 52 students showed that each aspect had a percentage of eligibility for the evaluation instrument for each aspect ≥ 57, and student creativity data had a normal distribution. It can be stated that this instrument is suitable for measuring student creativity in mathematics instructional media courses. So, it can be concluded that the evaluation instrument is very appropriate to be used as a measuring tool to assess student creativity in mathematics instructional media courses

Key Word*: Development; Evaluation Instrument; Creativity; Student.*

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I. Introduction

Creativity is the ability to produce new and original ideas that are valuable or useful (1,2). According to (3), creativity involves divergent thinking, namely the ability to produce various solutions to the same problem. In addition, (4) stated that creativity consists of three main components: domain skills, knowledge, and motivation. Creativity is not only about generating new ideas but also about the ability to explore and develop those ideas in various contexts (5).

George Pólya, a Hungarian mathematician, first introduced the concept of creativity in mathematics. (6) introduced creative thinking in solving mathematical problems. Pólya emphasizes the importance of a heuristic approach, a problem-solving strategy involving experience and experimentation to find solutions. (7) introduced the model Intellect Structure (Structure of Intellect Model), which covers various aspects of creative thinking abilities, namely fluency, flexibility, originality, and elaboration. Guilford explains that creativity is not only about generating unique ideas (originality) but also the ability to generate many ideas (fluency), the ability to change approaches or points of view (flexibility), and the ability to expand and elaborate ideas (elaboration).

Creativity is one of the critical skills needed for student success in the job market in the era of globalization and rapidly developing technology. (8) stated that education must develop creative skills so that students are not only able to follow orders but are also able to think innovatively. In the context of mathematics learning, teachers not only need to teach technical aspects or mathematical concepts but also need to develop soft skills such as creativity, communication, collaboration, and problem-solving (9).

Creativity is crucial to support active and innovative learning processes in higher education environments. According to (10), developing creativity can help students not only in academic studies but also in solving real problems in the workplace. Mathematics learning not only aims to build cognitive skills, but also encourages students to develop soft skills that are relevant for the world of work. development of soft skills such as creativity, cooperation, communication, and critical thinking skills in mathematics learning (11).

Although creativity is recognized as an essential competency, many traditional educational evaluation systems are ineffective in measuring creativity. Various existing evaluation instruments often cannot capture the creative dimension as a whole. (7) criticized evaluation methods that only focus on convergent assessment and do not accommodate divergent assessment, a crucial aspect of creativity.

Evaluation instruments must be specifically designed to measure various dimensions of student creativity (12,13). In the context of mathematics education, a good evaluation instrument can help assess the extent to which students can apply their creativity in designing effective instructional media. Instructional media is one of the mandatory subjects for students in the Mathematics Education study program in undergraduate programs. The learning outcomes applied in the instructional media course are (1) Students as a group can prepare proposals related to mathematics learning props that will be applied in mathematics learning from elementary/MI to SMA/SMK/MA levels, (2) Students collectively in groups to construct miniature mathematics learning props that have received approval from the lecturer, (3) Students in groups present miniature mathematics learning props in class, and (4) Students communicate with partner schools which will be used as a place to practice mathematics learning props which has received approval from the teaching lecturer. Student creativity is identified through the process of creating mathematics learning media, which involves divergent thinking, an important skill in creativity, where students are asked to produce innovative and diverse solutions in the context of mathematics learning (14). The theory of (14) explicitly shows how students engage in activities requiring creative thinking skills in building learning media.

Based on the learning achievements in the Instructional Media course, a reliable evaluation instrument is needed to measure the achievements. So far, no reliable evaluation instrument has been used to measure student creativity in learning media courses. Specific tasks like compiling learning media can stimulate and assess student creativity (15,16). Using appropriate evaluation instruments, lecturer can measure how much students develop creativity in compiling media supporting mathematics learning. In order to overcome this problem, it is important to develop valid and reliable evaluation instruments that can measure creativity accurately. According to (5), developing creativity evaluation instruments must consider various aspects, including divergent thinking, flexibility, and originality. This involves using diverse assessment methods such as task-based creativity tests, portfolio assessments, and self-assessments. Student creativity instruments in learning media courses refer to the creativity theory of (17), which includes creating new ideas, expanding basic ideas/concepts to improve and maximize creative efforts, and applying innovative ideas as fundamental contributions to life.

II. Material And Methods

A. Research Type

This research is one a kind of Research and Development (R&D). The R&D research method is used to produce certain products and test their effectiveness (18). R&D research is a process to develop or improve a new product, which can be accounted for (19). This development research aims to produce an evaluation instrument to measure student creativity in mathematics learning media courses. This research uses the R&D research method with the ADDIE (Analyze, Design, Develop, Implement, Evaluate) development model. R&D is used to develop and produce certain products (20). The ADDIE development model was chosen because it systematically developed student creativity evaluation instruments. This research uses two types of data, namely qualitative and quantitative data. Qualitative data was obtained based on the responses of course lecturers, creativity experts, and evaluation experts to the creativity evaluation instruments developed. Quantitative data was obtained through limited trial assessments to test the validity and reliability of the evaluation instruments being developed and extensive trials to obtain data on the effectiveness of evaluation instruments with a Likert scale.

The following are the research stages in detail based on the ADDIE stages:
The preparation stage consists of 4 steps, namely

1) Data collection: At this stage, the researcher collects data related to the evaluation instruments that lecturers have used to assess student creativity in mathematics instructional media courses through observations of the Semester Learning Plan and the implementation of the learning process, as well as interviews.
2) Identifying the problem: researchers identified the need for an evaluation instrument to measure student creativity in mathematics learning media courses based on the data that has been collected.

3) Literature study: researchers carry out literature studies to obtain in-depth information and understanding regarding the problems that have been identified.
4) Determining goals: researchers determine the purpose of developing an evaluation instrument to measure student creativity.

Planning Stage, this stage consists of 4 steps, namely:
1) Designing the concept, the researcher constructs a creativity evaluation instrument based on problem analysis, research objectives, and an in-depth understanding of its use to produce creative ideas relevant to solving problems.
2) Determining the form of the creativity evaluation instrument. After designing the concept, the researcher determines the creativity evaluation instrument in detail.
3) Creating an initial design: the researcher constructs an initial design based on the concept and form of the evaluation instrument that has been designed. This initial design is an initial prototype that will be tested and evaluated to assess the feasibility of the evaluation instrument being developed.
4) Prototype design; it is based on the initial design that has been constructed, then a complete prototype is developed, representing the evaluation instrument being developed.

Development Stage, the development stage consists of 4 steps, namely:
1) Trial, involving lecturers to test the evaluation instrument created. The trial results were used to revise the evaluation instrument.
2) Test the validity and reliability of the instrument using student assessment data using the student creativity evaluation instrument. This is important so that research instruments produce accurate and reliable data.
3) The expert assessment was carried out after revising the evaluation instrument based on the responses of the course lecturers. Creativity material experts and evaluation instrument experts provide input regarding the appropriateness of material content and evaluation instruments.
4) Revise the design of the evaluation instrument after receiving feedback from limited trials and expert assessments. Revisions are carried out in accordance with user and expert suggestions and recommendations to improve the quality of the evaluation instrument.

B. Implementation Stage:

The implementation stage consists of 1 step, namely field testing. The revised evaluation instrument was then tested on a larger group of students, namely in the Mathematics Education Study Program, PGRI Jombang University, Wahidiyah University, and Majapahit Islamic University, Mojokerto, to determine its effectiveness in assessing student creativity in mathematics learning media courses.

Evaluation Stage, the evaluation stage consists of 1 step, namely assessing the feasibility of the evaluation instrument by the lecturer to assess the effectiveness of the evaluation instrument in achieving the learning objectives that have been set.

Participants involved in the research are as follows in table 1.

Table 1. Research participants

No	Participants	Amount	Activity
1	Lecturer in Mathematics Instructional Media Courses	2 lecturers	RPS observations and interviews to describe the need for creativity evaluation instruments
2	Lecturer in Mathematics Instructional Media Courses	2 People	Assess the feasibility and respond to the use of evaluation instruments to measure student creativity.
3	Evaluation Instrument Expert	1 Person	Assess the content of the evaluation instrument
4	Material expert related to creativity	1 Person	Assess creativity content
5	Students from the Mathematics Education Study Program at PGRI Jombang University who are taking mathematics instructional media course	32 students	Test the validity and reliability of the evaluation instrument
6	Students from the Mathematics Education Study Program at Wahidiyah Kediri University, PGRI Jombang University, and UNIM Mojokerto who are taking mathematics instructional media course	52 students	Testing the effectiveness of the evaluation instrument (field trial)

C. Research Instrument

1. As shown in Table 2, the preliminary study observation guideline was carried out on the Semester Learning Plan (RPS) and the learning process for lecturers who taught mathematics instructional media courses.

Table 2 Preliminary Study Observation (RPS) and Learning Process Grid

No	Observation Grid	Observed object
1	Mathematics Instructional Media Course Description	RPS
2	Learning Achievements in Mathematics Instructional Media Courses	RPS
3	Models and methods	Learning models and methods used in Mathematics Instructional Media lectures
4	Evaluation instrument used to measure student creativity	Evaluation Instrument

2. Preliminary Study Interview Grid

This research conducted interviews with lecturers who taught the Mathematics Learning Media course. Table 3 describes the interview grid.

Table 3 Preliminary Study Interview Grid

No	Indicator
1	Evaluation instruments that lecturers have used to measure student creativity in mathematics instructional media courses
2	Evaluation instruments needed by lecturers to measure student creativity in mathematics instructional media courses
3	Reference to standard evaluation instruments that lecturers can use to measure student creativity in mathematics instructional media courses
4	Mention the standard evaluation instruments lecturers use to measure student creativity in mathematics instructional media courses.
5	The evaluation instruments currently used by lecturers can measure student creativity in mathematics instructional media courses

3. Questionnaire Instrument Grid of Expert Feasibility

Eligibility of experts regarding evaluation instruments by Mathematics Education Study Program Lecturers who concentrate in the field of evaluation as shown in Table 4.

Table 4 Grid of Expert Assessment Evaluation Instruments

No	Aspect	Indicator	Item
1	Design Quality	Attractiveness Layout	1 2
2	Technical Quality	Easy to use Practicality Comprehensive	3 4 5
3	Usefulness	Making things easier for lecturers Developing student creativity Growing students' interest in learning Time efficiency Clarify student understanding	6 7 8 9 10

4. Questionnaire Instrument Grid of Creativity Material Expert Eligibility

Eligibility for creativity material experts is given by Mathematics Education Study Program Lecturers who concentrate on the field of creativity, as shown in Table 5.

Table 5 Questionnaire Instrument Grid of Creativity Material Expert Eligibility

Aspect	Indicator	Item
New Idea	1. Constructing mathematics instructional media that has never existed before	1
	2. Construct at least two mathematics instructional media for the same material,	2
	3. The constructed mathematics instructional media has a difference of at least 2 items with existing media,	3
	4. Constructed mathematics instructional media can be used to convey 2 different materials	4
Basic concepts for enhancing and maximizing creative efforts	5. Learning materials become the basis for constructing mathematics instructional media	5
	6. The research results are used as a basis for constructing mathematics instructional media	6
	7. The results of community service are used as the basis for constructing mathematics instructional media	7

	8. Existing instructional media is used as a reference in constructing mathematics instructional media	8
	9. The courses studied are used as references in constructing mathematics instructional media	9
Apply creative ideas	10. Implementation of mathematics instructional media constructed in educational units (SD/MI or SMP/MTs or SMA/MA) or tutoring institutions	10
	11. There are instructions for use related to the constructed mathematics instructional media	11
	12. Analysis of the impact of student learning outcomes after implementing mathematics instructional media.	12
	13 Analysis of the impact of student motivation and interest in learning after implementing mathematics instructional media.	13
	14. Teachers and students can use the constructed mathematics instructional media during learning.	14

5. Lecturer Response Questionnaire Grid

A lecturer response questionnaire was used to obtain data regarding lecturers' responses as course instructors who use evaluation instruments at the implementation stage of the lecturer evaluation section. Table 6 displays a questionnaire grid of lecturers' responses to the evaluation instrument.

Table 6 Lecturer Response Questionnaire Grid

No	Aspect	Indicator	Item
1	Quality of Evaluation Instruments	Supports course learning achievements Suitability of evaluation instruments to course learning outcomes Compatibility with creative aspects	1 2 3
2	Design	Layout of assessment aspects Layout of assessment indicators Assessment score layout	4 5 6
3	Technical	Easy to use by lecturers Comprehensive	7 8
4	Benefit	Fostering the development of student creativity Growing student motivation to work	9 10

D. Data analysis

1. RPS observation data and lecturer interview results were analyzed descriptively to determine the need for creativity evaluation instruments.
2. Assessment data from experts (Lecturers in Mathematics Instructional Media Courses, creative material experts, and evaluation instrument experts) were analyzed descriptively and qualitatively to describe the feasibility.
3. Test the validity and reliability of the instrument using student assessment data using the student creativity evaluation instrument with SPSS-assisted product moment correlation (N=32, 0.349), reliable if the value is 0.8
4. Trying out a larger group of students, namely in the Mathematics Education Study Program, PGRI Jombang University, Wahidiyah University, and Majapahit Islamic University, Mojokerto, to determine the effectiveness

III. RESULT

a. Designing the concept,

The researcher constructs a creativity evaluation instrument based on problem analysis, research objectives, and an in-depth understanding of its use to produce creative ideas relevant to solving problems. Creativity evaluation instrument in theory (Sunardi et al., 2017). evaluation instrument grid as in Table 9.

Table 9 Grid of Student Creativity Evaluation Instruments

No	Aspect	Indicator
1	Creating New Ideas	1.1 Instructional media constructed by students has never existed before and is completely new
		1.2 Students construct at least two instructional media for the same material
		1.3 Constructed instructional media can be used to convey two different materials
		1.4 Instructional Media constructed by students is a modification of existing media

2	Expand basic Ideas/Concepts to enhance and maximize creative efforts	2.1 Constructed instructional media refers to learning material
		2.2 The constructed instructional media refers to research results
		2.3 The instructional media that is constructed refers to the results of community service
		2.4 Constructed instructional media refers to existing learning media
		2.5 The constructed instructional media refers to the courses that have been studied
3	Applying creative ideas as a real contribution to activities	3.1 The constructed instructional media is implemented in schools (SD/MI/SMP/MTS/SMA/MA/SMK) or Tutoring Institutions
		3.2 Students provide usage instructions related to the constructed mathematics instructional media
		3.3 The constructed instructional media has a positive impact on student learning outcomes after being implemented
		3.4 The constructed instructional media has a positive impact on students' motivation and interest in participating in learning
		3.5 Teachers and students can use the constructed instructional media during learning

b. Development Stage

a. Expert assessment of evaluation instruments

The draft instrument was validated by evaluation instrument experts. Table 10 is the result of expert validation of evaluation instruments.

Table 10 Expert Validation Results

Question	Expert Answer Results
1. What do experts think regarding design regarding the aspect of attractiveness for instrument users?	The instrument has a good appeal to users
2. What do experts think regarding the design regarding the instrument layout aspect?	The instrument layout is well-designed
3. What do experts think regarding the convenience for instrument users?	The instrument created can provide convenience for users, namely lecturers in mathematics instructional media courses
4. What do experts think regarding the practicality of instrument users?	The instrument created is very practical for use in measuring student creativity in mathematics learning media courses
5. What do the experts think regarding the completeness of the instrument?	It's complete. It is necessary to check the total score in the keyword again with the total final score the student can obtain. In the progress report section, it can be considered that students' competency achievements in learning should be added before creative development.
6. What do experts think about the benefits for instrument users?	The instrument developed can be beneficial for users in evaluating student creativity in constructing mathematics instructional media.
7. What do experts think regarding time efficiency for instrument users?	Very efficient because it is equipped with student progress reports

Table 10 shows that experts gave a positive assessment of the instruments developed. The instrument meets good design and layout standards and is considered practical, easy to use, complete, useful, and efficient. Suggestions for further improvement regarding the total score and progress report show that although the instrument is very good, there is still room for improvement so that this instrument becomes more optimal in its function.

c. Expert assessment of creativity

Creativity assessments are carried out by mathematics education lecturers with a research focus in creativity. Creativity experts were asked to provide a value for each evaluation instrument question. The assessment uses a Likert scale (4, 3, 2, 1), where 4 means strongly agree, 3 agree, 2 quite agree, and 1 does not agree. The results of the creativity expert assessment are as shown in Table 11

Table 11. Expert Creativity Assessment Results

Statement	Creativity Assessment
1. Students construct mathematics instructional media that has never existed before, which is an indicator of creating new ideas.	4
2. Students construct at least 2 mathematics instructional media for the same material, which is an indicator of creating new ideas.	4

3. The mathematics instructional media that students construct has a difference of at least 2 items with existing media, which indicates creating new ideas.	4
4. Mathematics instructional media that students construct can be used to convey 2 different materials, an indicator of creating new ideas.	4
5. Students choose learning materials to become the basis for constructing mathematics instructional media, which indicates expanding basic ideas/concepts to improve and maximize creative efforts.	4
6. Students refer to research results as a basis for constructing mathematics instructional media, which is an indicator of expanding basic ideas/concepts to improve and maximize creative efforts.	4
7. Students refer to the results of community service as a basis for constructing mathematics instructional media, which is an indicator of expanding basic ideas/concepts to improve and maximize creative efforts.	4
8. Students use existing instructional media as a reference in constructing mathematics learning media, which indicates expanding basic ideas/concepts to improve and maximize creative efforts.	4
9. Students refer to the courses they have studied in constructing mathematics learning media, which indicates expanding basic ideas/concepts to improve and maximize creative efforts.	4
10. Students implement mathematics instructional media constructed in educational units (SD/MI or SMP/MTs or SMA/MA) or tutoring institutions, which indicates applying creative ideas as a real contribution to life.	4
11. Students provide usage instructions related to the constructed mathematics instructional media, which is an indicator of applying creative ideas as a real contribution to life.	4
12. Students analyze the impact of student learning outcomes after implementing mathematics instructional media, which indicates applying creative ideas as a real contribution to life.	4
13 Students analyze the impact of motivation on students' interest in learning after implementing mathematics instructional media, which is an indicator of applying creative ideas as a real contribution to life.	4
14. Mathematics instructional media constructed by students can be used by teachers and students during learning, which indicates applying creative ideas as a real contribution to life.	4

Table 11 shows that the creativity expert's assessment consistently scored 4 for each indicator. This indicates that creativity experts agree that evaluation instruments can measure student actions that reflect creativity in mathematics instructional media courses. Next, the instrument was tested at PGRI Jombang University and Wahidiyah Kediri University with 32 respondents. The test results are used to describe the validity and reliability of the instrument. Reliability calculation results are as shown in Table 12, and validity calculation results are shown in Table 13

Table 12 Reliability Statistics of Creativity Evaluation Instruments

Cronbach's Alpha	N of Items
.870	14

Table 12 shows the Cronbach's Alpha value of 0.870 > 0.8, which means that the creativity evaluation instrument meets the reliability requirements with a high level of reliability. High reliability shows that this instrument is consistent in measuring what it is intended to measure, namely student creativity. There are 14 items in this instrument, which means this instrument has 14 questions or statements that are interrelated in its measurement

Table 13 Validity Calculation Results of Creativity Evaluation Instruments

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	TOTAL
X1	Pearson Correlation	1	278	.575**	.509**	.716**	.417*	.021	-.100	.125	.470**	.591**	.259	.239	.012	.605**
	Sig. (2-tailed)		.124	.001	.003	.000	.017	.911	.587	.497	.007	.000	.153	.188	.947	.000
	N	2	2	2	2	2	2	2	2	2	2	2	2	2	2	32
X2	Pearson Correlation	.278	1	.062	.346	.241	.358*	.357*	.369*	.476**	.318	.286	.314	.119	.337	.559**
	Sig. (2-tailed)	.124		.735	.052	.183	.044	.045	.038	.006	.076	.113	.080	.518	.059	.001
	N	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
X3	Pearson Correlation	.575**	.062	1	.317	.631**	.329	-.042	-.062	.300	.469**	.538**	.491**	.408*	.256	.592**
	Sig. (2-tailed)	.001	.735		.077	.000	.066	.821	.736	.095	.007	.001	.004	.021	.158	.000
	N	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32

X4	Pearson Correlation	.509**	.346	.317	1	.410*	.334	-.044	.054	.208	.351*	.563**	.181	.392*	.034	.554**
	Sig. (2-tailed)	.003	.052	.077		.020	.062	.812	.770	.254	.049	.001	.321	.026	.855	.001
	N	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
X5	Pearson Correlation	.716**	.241	.631**	.410*	1	.567**	.079	.010	.202	.550**	.675**	.435*	.426*	.134	.712**
	Sig. (2-tailed)	.000	.183	.000	.020		.001	.667	.956	.268	.001	.000	.013	.015	.464	.000
	N	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
X6	Pearson Correlation	.417*	.358*	.329	.334	.567**	1	.469**	.452**	.389*	.484**	.464**	.283	.077	-.020	.693**
	Sig. (2-tailed)	.017	.044	.066	.062	.001		.007	.009	.028	.005	.008	.117	.674	.914	.000
	N	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
X7	Pearson Correlation	.021	.357*	-.042	-.044	.079	.469**	1	.750**	.556**	.043	.094	.222	.143	.283	.474**
	Sig. (2-tailed)	.911	.045	.821	.812	.667	.007		.000	.001	.817	.611	.221	.434	.116	.006
	N	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
X8	Pearson Correlation	-.100	.369*	-.062	.054	.010	.452**	.750**	1	.480**	.191	.012	.274	.213	.187	.466**
	Sig. (2-tailed)	.587	.038	.736	.770	.956	.009	.000		.005	.296	.948	.130	.242	.305	.007
	N	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
X9	Pearson Correlation	.125	.476**	.300	.208	.202	.389*	.556**	.480**	1	.398*	.353*	.553**	.445*	.509**	.668**
	Sig. (2-tailed)	.497	.006	.095	.254	.268	.028	.001	.005		.024	.048	.001	.011	.003	.000
	N	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
X10	Pearson Correlation	.470**	.318	.469**	.351*	.550**	.484**	.043	.191	.398*	1	.751**	.676**	.559**	.346	.745**
	Sig. (2-tailed)	.007	.076	.007	.049	.001	.005	.817	.296	.024		.000	.000	.001	.052	.000
	N	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
X11	Pearson Correlation	.591**	.286	.538**	.563**	.675**	.464**	.094	.012	.353*	.751**	1	.628**	.616**	.390*	.788**
	Sig. (2-tailed)	.000	.113	.001	.001	.000	.008	.611	.948	.048	.000		.000	.000	.027	.000
	N	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
X12	Pearson Correlation	.259	.314	.491**	.181	.435*	.283	.222	.274	.553**	.676**	.628**	1	.756**	.553**	.721**
	Sig. (2-tailed)	.153	.080	.004	.321	.013	.117	.221	.130	.001	.000	.000		.000	.001	.000
	N	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
X13	Pearson Correlation	.239	.119	.408*	.392*	.426*	.077	.143	.213	.445*	.559**	.616**	.756**	1	.516**	.640**
	Sig. (2-tailed)	.188	.518	.021	.026	.015	.674	.434	.242	.011	.001	.000	.000		.002	.000
	N	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
X14	Pearson Correlation	.012	.337	.256	.034	.134	-.020	.283	.187	.509**	.346	.390*	.553**	.516**	1	.468**
	Sig. (2-tailed)	.947	.059	.158	.855	.464	.914	.116	.305	.003	.052	.027	.001	.002		.007

	N	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
TOTAL	Pearson Correlation	.605**	.559**	.592**	.554**	.712**	.693**	.474**	.466**	.668**	.745**	.788**	.721**	.640**	.468**	1
	Sig. (2-tailed)	.000	.001	.000	.001	.000	.000	.006	.007	.000	.000	.000	.000	.000	.007	
	N	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32

Table 13 shows the Pearson correlation (r) values between each item and the total score ranging from 0.466 to 0.788, all greater than 0.349. This shows that all items meet the validity criteria.

Implementation Stage, the implementation stage consists of 1 step, namely field testing. The revised evaluation instrument was then applied to learning media lectures at the Mathematics Education Study Program, PGRI Jombang University, Wahidiyah University, and Majapahit Islamic University, Mojokerto. This application aims to determine the effectiveness of evaluation instruments in assessing student creativity in mathematics instructional media courses. There were 52 students involved. The following are the results of student creativity as measured by evaluation instruments.

Table 14 Student Creativity Scores

NO	ASPECTS OF CREATIVITY													
	Creating New Ideas				Expand basic Ideas/Concepts to enhance and maximize creative efforts					Applying creative ideas as a real contribution to activities				
	1	2	3	4	1	2	3	4	5	1	2	3	4	5
1	2	3	4	3	4	2	2	4	4	4	4	4	4	4
2	2	3	4	3	4	2	2	4	4	4	4	4	4	4
3	2	3	4	3	4	2	2	4	4	4	4	4	4	4
4	2	3	3	3	4	2	2	4	4	4	4	4	4	4
5	2	3	3	3	4	2	2	4	4	4	4	4	4	4
6	2	3	4	3	4	2	2	4	4	4	4	4	4	4
7	2	3	3	3	4	2	2	4	4	4	4	4	4	4
8	2	3	3	3	4	2	2	4	4	4	4	4	4	4
9	2	3	3	3	4	2	2	4	4	4	4	4	4	4
10	2	3	3	3	4	2	2	4	4	4	4	4	4	4
11	2	3	4	3	4	2	2	4	4	4	4	4	4	4
12	2	3	4	3	4	2	2	4	4	4	4	4	4	4
13	2	3	4	3	4	3	2	4	4	4	4	4	4	4
14	2	3	4	3	4	2	2	4	4	4	4	4	4	4
15	2	3	3	3	4	2	2	4	4	4	4	4	4	4

16	2	3	3	3	4	2	2	4	4	4	4	4	4	4
17	2	3	3	3	4	3	2	4	4	4	4	4	4	4
18	2	3	3	3	4	3	2	4	4	4	4	4	4	4
19	2	3	3	3	4	3	2	4	4	4	4	4	4	4
20	2	3	3	3	4	2	3	4	4	4	4	4	4	4
21	2	2	2	3	4	2	2	4	3	4	4	4	4	4
22	2	2	2	3	4	2	2	4	3	4	4	4	4	4
23	2	2	3	3	4	3	3	4	3	4	4	4	4	4
24	2	3	3	3	4	3	3	4	2	4	4	4	4	4
25	2	3	3	3	4	3	3	4	2	4	4	4	4	4
26	2	2	3	3	4	3	3	4	3	4	4	4	4	4
27	2	3	2	3	4	3	2	4	3	4	4	4	4	4
28	2	3	2	3	4	3	2	4	3	4	4	4	4	4
29	2	3	3	3	4	3	3	4	3	4	4	4	4	4
30	2	3	3	3	4	3	3	4	3	4	4	4	4	4
31	2	2	3	3	4	3	3	4	2	4	4	4	4	4
32	2	3	3	3	4	3	3	4	2	4	4	4	4	4
33	2	3	2	3	4	3	3	4	3	4	4	4	4	4
34	2	2	2	3	4	2	2	4	2	3	3	3	3	3
35	2	2	3	3	4	3	3	4	2	3	3	3	3	3
36	2	3	3	3	4	3	3	4	2	3	3	3	3	3
37	2	2	4	4	4	2	2	4	4	3	4	4	4	4
38	2	2	4	4	4	2	2	4	4	3	4	4	4	4
39	3	2	4	3	4	2	2	3	4	4	4	4	4	4
40	3	2	4	3	4	2	2	3	4	4	4	4	4	4
41	0	0	3	3	4	1	1	4	4	4	4	0	0	4

42	0	0	3	3	4	1	1	4	4	4	4	0	0	4
43	0	0	3	3	4	1	1	4	4	4	4	0	0	4
44	0	0	3	3	4	1	1	4	4	4	4	0	0	4
45	4	0	0	0	4	2	4	3	4	4	4	4	4	4
46	4	0	0	0	4	2	4	3	4	4	4	4	4	4
47	4	0	0	0	4	2	4	3	4	4	4	4	4	4
48	4	0	0	0	4	2	4	3	4	4	4	4	4	4
49	0	3	4	3	4	2	4	3	3	4	4	4	4	4
50	0	3	4	3	4	2	4	3	3	4	4	4	4	4
51	0	3	4	3	4	2	4	3	3	4	4	4	4	4
52	0	3	4	3	4	2	4	3	3	4	4	4	4	4
Amount	98	121	154	146	208	117	128	198	181	203	205	189	189	205
Total Max Score	208	208	208	208	208	208	208	208	208	208	208	208	208	208
Lost Aspects Of Creativity Percentage	62%				80%					95%				

In Table 14, the score results for each aspect of creativity can be seen. In the "Creating New Ideas" aspect, the feasibility of the evaluation instrument is 62%, which is located at the interval $x \geq 57\%$, the aspect "Expanding Basic Ideas / Concepts to improve and maximize creative efforts" shows the feasibility of the evaluation instrument is 80% which is located at the interval $x \geq 57\%$, the aspect "Applying creative ideas as a real contribution to activities" shows the feasibility of the evaluation instrument at 95% which is located in the interval $x \geq 57\%$. It can be concluded that the evaluation instrument is effective for measuring student creativity in mathematics instructional media courses.

Next, the data in Table 14 was tested for normality using Kolmogorov-Smirnov Test. Normality analysis uses tests Kolmogorov-Smirnov The aim is to determine whether the data distribution for each indicator of student creativity is normally distributed or not. The results of normality calculations are presented in Table 15

Table 15 Normality Calculation Results with the Kolmogorov-Smirnov Test

		Unstandardized Residual
N		52
Normal Parametersa,b	Mean	0E-7
	Std. Deviation	0E-8
Most Extreme Differences	Absolute	.132
	Positive	.094
	Negative	-.132
Kolmogorov-Smirnov Z		.952
Asymp. Sig. (2-tailed)		.325
a. Test distribution is Normal.		

b. Calculated from data.

Table 15 shows that the two-way asymptotic significance value is 0.325, which is greater than 0.05, which means that the data distribution for each indicator of student creativity is normally distributed.

IV. Discussion

Description of courses based on mathematics learning media Table 7, namely developing students' skills in creating instructional media and implementing the results of learning media in mathematics learning. (21) emphasized that Project-Based Learning (PjBL) allows students to develop practical skills through real projects. PjBL facilitates creating and developing learning media because students are actively involved in creating real solutions relevant to mathematics learning. PjBL encourages students to collaborate, think critically, and produce innovative work by exploring real problems. Creativity develops when students are free to design, develop, and implement their ideas into learning media that suit mathematics learning needs (22). PjBL places students in an active position as creators of knowledge, not just recipients of information.

(23) expand cognitive load theory by focusing on how instructional design can optimize learning. In the context of learning media, this theory supports the importance of good media design to help students understand mathematical concepts more efficiently. (24) emphasized that effective learning occurs when students are directly involved in relevant experiences. In this case, creating and developing learning media provides opportunities for students to apply their knowledge in a practical context.

Table 8 states that there is a need for specific creativity assessment instruments. (25) stated that specific and detailed creativity assessment rubrics help teachers identify and evaluate various dimensions of student creativity. A clear and detailed rubric allows for the assessment of aspects such as originality, flexibility, and fluency in ideas, which are important components of creativity.

Table 10 evaluation experts state that the creativity instrument meets good design and layout standards and is considered practical, easy to use, complete, useful and efficient. Good instrument design must meet the principles of aesthetics, ease of navigation, and functionality. (26) emphasizes the importance of intuitive and practical design. Expert assessments stating that the instrument has a good layout, is easy to use, and is practical support this theory.

Table 12 shows the Cronbach's Alpha value of 0.870 > 0.8, which means that the creativity evaluation instrument meets the reliability requirements with a high level of reliability. According to (27), a Cronbach's Alpha value above 0.8 indicates that the instrument has strong internal consistency, which means the items in the instrument effectively measure the intended aspect. (28) asserts that high reliability in psychometric measures, such as creativity, ensures that the instruments can be trusted to provide stable and consistent results in repeated assessments.

Table 13 shows the Pearson correlation (r) values between each item and the total score ranging from 0.466 to 0.788, all of which are greater than 0.349. (29) state that a significant and quite large correlation between items and the total score indicates that the items have good validity because they contribute significantly to the overall construct measurement. (30) stated that a correlation value greater than 0.3 indicates that these items have a significant contribution to the construct being measured so that the overall validity of the instrument can be said to be good.

Table 14 shows that each aspect has a feasibility evaluation instrument located at the interval $x \geq 57\%$. Based on theory of (31) It can be stated that this instrument is very feasible and effective to measure student creativity in mathematics learning media courses. The high feasibility value of the evaluation instrument for each indicator supports the conclusion that this instrument is suitable for use as in theory (32). (32) emphasizes that the validity of an instrument depends not only on statistical evidence, such as reliability, but also on the relevance and representativeness of the items used to measure a particular construct. (33) states that creativity can be measured through various aspects such as the ability to create new ideas, expand ideas, and apply them in relevant contexts. Instruments that can measure these three aspects consistently with high mean scores are considered valid instruments for measuring creativity. (7) also emphasized the importance of multi-aspect assessment in measuring creativity, and instruments that include several indicators with significant average results can be considered feasible and comprehensive in evaluating creativity.

Table 15 shows that the two-way asymptotic significance value is 0.325, which is greater than 0.05, indicating that the data distribution for each indicator of student creativity is normally distributed. A good evaluation instrument should produce data that is valid and reliable and conforms to statistical assumptions such as normality (34,35). The normal distribution of data produced by the creativity evaluation instrument shows that the instrument is able to capture variations in student creativity in a representative and consistent manner

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