**Jurnal Kependidikan:**
**Jurnal Hasil Penelitian dan Kajian Kepustakaan di Bidang Pendidikan, Pengajaran dan Pembelajaran**
https://e-journal.undikma.ac.id/index.php/jurnalkependidikan/index

*Vol. 9, No. 3 : September 2023*
*E-ISSN: 2442-7667*
*pp. 846-857*
Email: jklppm@undikma.ac.id

# An Instrument Development to Measure the Creative Habits of Mind for Prospective Elementary School Teachers

**Neni Maulidah[1]*, Sapriya[2], Nana Supriatna[3]**
[1]*Elementary Education, Graduate School, Universitas Pendidikan Indonesia
[1]*Universitas Bhayangkara Jakarta Raya
[2,3]Universitas Pendidikan Indonesia
*Corresponding Author. Email: nenimaulidah@upi.edu

**Abstract:** This study aims to produce an instrument for measuring the creative habits of mind for prospective elementary school teachers in relation to developing creative teaching and learning ideas. This study is development research using the ADDIE model, which consists of analysis, design, development, implementation, and evaluation. The study was conducted by involving one expert validator and one practitioner validator. At the implementation stage, trials were carried out on a number of 15 prospective elementary school teacher students. Data collection was carried out using a questionnaire and analyzed using qualitative and quantitative data analysis. The results of the instrument validations for measuring creative habits of mind show that creativity development and creative pedagogy development experts consider the instrument to be well qualified and suitable for measuring the creative habits of mind for prospective elementary school teacher students. The average test results in small groups of both lecturers and students show that the resulting instruments are in good qualifications. The end result of this development research is an instrument for measuring the creative habits of mind for prospective elementary school students who are well-qualified, appropriate, and ready to use.

**Article History**
Received: 02-06-2023
Revised: 13-07-2023
Accepted: 20-08-2023
Published: 16-09-2023

**Key Words:**
Measurement Instruments; Creative Habits of Mind; Prospective Elementary School Teachers.

**How to Cite:** Maulidah, N., Sapriya, S., & Supriatna, N. (2023). An Instrument Development to Measure the Creative Habits of Mind for Prospective Elementary School Teachers. *Jurnal Kependidikan: Jurnal Hasil Penelitian dan Kajian Kepustakaan di Bidang Pendidikan, Pengajaran dan Pembelajaran*, *9*(3), 846-857. doi:https://doi.org/10.33394/jk.v9i3.8389

https://doi.org/10.33394/jk.v9i3.8389



## Introduction

The study of creativity is not a new thing in the world. Guilford (1950; 1957; 1967; 1968; 1973; 2017) introduced and developed definitions of creativity, its development and measurement more than half a century ago. Currently, in the 20th century, creativity is one of the many skills that are back in great demand, developed, researched and colored changes in the education system and curriculum adjustments throughout the world. Creativity has become phenomenal mandatory skill in education since the demands of 21st century educational pedagogy and 21st century skills were introduced and implemented in educational practice worldwide (Agaoglu & DemIr, 2020; Care et al., 2012; Griffin et al., 2012; Howells, 2018; Kautz et al., 2014; P21, 2009, 2019; Saxena, 2015). Creativity is explicitly mentioned as a desired outcome of national curricula around the world. Likewise, the goals of Indonesian education also explicitly mention creativity as one of the skills of its educational output (Supriatna & Maulidah, 2020) . Indonesia's education curriculum now also pivots as skill-based education which requires the integration of 6C (Critical Thinking, Collaboration, Creative Thinking, Character Education, Citizenship, and Communication) in learning, including creativity.

*Vol. 9, No. 3 : September 2023*
*E-ISSN: 2442-7667*
*pp. 846-857*
*Email: jklppm@undikma.ac.id*

The student creativity development will only be realized from creative teaching and learning created by creative teachers (Lin, 2011). Learning that is designed to provide space for creativity development will depend on the role of the teacher itself. Therefore, the main key is the creativity of teachers or prospective teachers in creating creative teaching ideas (Cigerci, 2020; Maulidah & Amelia, 2022; Robinson & Aronica, 2016; Supriatna & Maulidah, 2020). However, the definition of a creative teacher and the creative habits of mind of a teacher have not yet found definite boundaries. Various studies and research on how best to grow it and how to evaluate and measure it are still being developed today. Likewise, studies and research on various ways of fostering creativity and measuring creativity with student objects have been found. However, studies and research on teacher creative measurement as the main character who develops teaching ideas to foster student creativity are still not widely found. This includes the absence of a measurement instrument specifically designed to track the progress of creative habits of mind for teachers and prospective teachers, especially in relation to their creative abilities in developing creative teaching and learning pedagogical ideas for the development of student creativity.

This is indicated to be one of the factors that contribute to schooling practices that kill creativity (Robinson, 2006; Robinson & Aronica, 2015, 2016). The urgency of developing creativity in schools is not accompanied by adequate provision for teachers and prospective teachers to develop creativity itself (Abdulla, AM, & Cramond, 2017; Cigerci, 2020; Howells, 2018; Kivunja, 2014; Maulidah & Amelia, 2022). This of course will make it difficult for teachers and/or prospective teachers who are charged with developing creative teaching and learning that develops student creativity but are not taught the debriefing on defining boundaries, classifying indicators and measuring them. Even they themselves do not know how creative they are and whether they have the creative habit of mind in developing pedagogical ideas for creative teaching and creative learning to develop student creativity.

Measuring the creative habits of mind for prospective teachers is the first step that should be taken. The teacher education program will be the basic root that must first be touched upon to produce creative teacher candidates who are equipped and know the potential and size of their creative thinking habits in designing the development of creativity in schools. Thus, the very first thing to do is to take boundaries regarding the definition of creativity, dimensions of creativity, indicators of attitudes or habits that appear as markers of creativity and to develop a valid and reliable measurement tool approach specifically designed to measure the creative thinking habits of teachers and prospective teachers, especially in relation with the development of creative learning ideas. Therefore, this study aims to produce instrument products for measuring the creative habits of mind for prospective elementary school teachers. The measurement of habits of mind in question is the ability to use creativity in developing pedagogical ideas for creative teaching and creative learning aimed at developing student creativity.

## Research Method

This research method uses the ADDIE model research and development (R & D) design from Branches (2009). The development research steps with the ADDIE model consist of analyze, design, develop, implement, and evaluate. At the analysis stage, the researcher conducted a needs analysis for the development of an instrument for measuring the creative thinking habits of prospective elementary school teachers. Needs analysis was carried out by giving closed questionnaires to a number of prospective elementary school teacher students, especially students who had received learning development courses and also given to several lecturers in the basic education study program. The next stage is designing the instrument,

**Jurnal Kependidikan:**
**Jurnal Hasil Penelitian dan Kajian Kepustakaan di Bidang Pendidikan, Pengajaran dan Pembelajaran**
https://e-journal.undikma.ac.id/index.php/jurnalkependidikan/index
*Vol. 9, No. 3 : September 2023*
*E-ISSN: 2442-7667*
*pp. 846-857*
Email: jklppm@undikma.ac.id

the development which involves expert and participant validation as well as the implementation and product evaluation of the instrument for measuring the creative habits of mind for prospective elementary school teachers. The expert validator who assessed the draft instrument for measuring the creative habits of mind for elementary school teacher candidates was one expert on developing creativity and creative pedagogy, and one practitioner (Elementary Teacher Education lecturer who teaches learning development and/or microteaching courses).

The data collected through the implementation of formative evaluations were grouped into three parts, namely: (1) the first phase evaluation data in the form of data from expert test results for developing creativity and creative pedagogy, (2) respondent evaluation data, namely data from individual trials with 5 students, (3) data from small/limited group trials with 10 students. Expert validation was carried out using an assessment instrument in the form of a feasibility trial questionnaire to experts on creativity development and creative pedagogy as well as field practitioners. Products that have been produced are given to respondents to be examined. Respondents who were involved as experts on the development of creativity and creative pedagogy and field practitioners were lecturers from elementary school teacher education in charge of pedagogic courses and elementary school learning development courses. The score of the validation results from the validator for all aspects assessed is calculated by the average using the formula:

$$R = \frac{1}{n}\sum_{i=1}^{n} V_i$$

Information:
R : The average of the assessment results from the validators,
Vi : Score from the i-th validator assessment,
n : Many validators

The average data is then calculated as a percentage by the formula:

$$p = \frac{R}{5} \times 100\%$$

Source: (Mulyatiningsih, 2012)

The results of eligibility scores percentage from the validator whose results are then converted with the criteria and interpretation of the quality level of the eligibility instrument for measuring the creative habits of mind for prospective elementary school teacher students is set out in Table 1.

**Table 1. Conversion of Feasibility Quality Levels of Creative Habit of Mind Measurement Instruments Student of Prospective Elementary School Teachers**

| Achievement Level | Qualification | Interpretation |
|---|---|---|
| 90 % - 100 % | Very good | Very decent, no need to revise |
| 75 % - 89 % | Good | Decent, revised as necessary |
| 65 % - 74 % | Enough | Decent enough, pretty much revised |
| 55 % - 64 % | Not enough | Not feasible, much to be revised |
| 0 % - 54 % | Very less | Not worth it to be totally revised |

Source: (Mulyatiningsih, 2012)

The research data collection method is in the form of a questionnaire. Questionnaire sheets were used to collect needs analysis data, instrument feasibility trial data for creativity development and creative pedagogy experts, practitioners, and response questionnaire sheets from lecturers and students during the trial. The collected data were then analyzed using qualitative and quantitative data analysis.

*Vol. 9, No. 3 : September 2023*
*E-ISSN: 2442-7667*
*pp. 846-857*
*Email: jklppm@undikma.ac.id*

## Results and Discussion

Based on the research that has been done, it is found that data from the development process results in the form of data from the due diligence of experts and practitioners as well as data on the results of product trials (especially at the stages of development, implementation and evaluation).

### *Analyze*

At the analysis stage, the activities carried out included distributing needs analysis questionnaires to prospective elementary school teacher students and lecturers in Pedagogic, Microteaching, Learning development for both Mathematics, Indonesian, Science and Social Studies in Elementary Schools related to development needs a tool for measuring creative habits of mind for prospective elementary school teacher students in relation to the development of creative teaching and learning pedagogies for the development of student creativity. The results of the analysis at this stage are then compiled as a summary analysis to be evaluated independently and followed by a joint evaluation with colleagues to refine the results of the analysis.

Based on the results of the needs analysis questionnaire, it can be concluded that 89% of respondents stated that they had not measured their creative habits of mind, especially in relation to developing pedagogical ideas for creative teaching and learning also developing student creativity. Respondents also stated that after obtaining information about 21st century skills which included one of the skills, namely creativity, and placing the teacher as a developer of creativity in learning, respondents felt the need to know the level of their creative habits of mind. However, respondents also stated that instruments that comprehensively measure creative skills of mind that measure all aspects of creativity and lead to creative habits of mind are still difficult to find. sSpecifically a comprehensive measurement of creativity measuring four aspects, starting from creative process, creative personality, creative products and creative climate has not been found. Even if it is found that it is still in a foreign language and has not been devoted to measuring creative habits of mind with 5 dimensions (curious, imaginative, collaborative, persistent and disciplined). Instruments in general also do not specifically measure creative habits of mind in relation with the ability to develop creative learning and teaching ideas that must be owned by a teacher and prospective teacher.

### *Design*

The design phase focused on three activities, namely: at the design stage, there are the instruments for creative habits of mind including (1) defining creative habits of mind and selecting indicators for creative habits of mind; (2) choosing a comprehensive form and method of measuring creativity from various theories; and (3) designing a draft instrument for measuring creative habits of mind. At the stage of defining and selecting indicators of creative habits of mind based on previous theory and research. Defining the habit of creative mind needs to be done to differentiate it from the definition of creative in general. Creative habits of mind are different from creative thinking skills. The word skill refers to the human ability to use the mind to change something so that it has a more meaningful value. Meanwhile, habit refers to human actions (involving skills) in the same way that is still being done repeatedly. Thus, habits are certainly more complex than skills. The term 'habits' has been studied and coined by Marzano in his book 'A Different Kind of Classroom (Marzano, 1992) as one of the five dimensions of learning and is the highest learning dimension. Marzano (1992) then divides the 'habits of mind' into three categories and one of them is Creative Habits of Mind. Because the creative habits of mind are complex, they must be derived from various sub-habits and clear indicators to assess it.

*Vol. 9, No. 3 : September 2023*
*E-ISSN: 2442-7667*
*pp. 846-857*
*Email: jklppm@undikma.ac.id*

The researcher then developed a creative habits of mind instrument based on creative habits of mind which describes sub-habits and indicators of creative thinking habits based on research by Lucas, Claxton & Spencer, from the Center for Real World Learning at Winchester University (2013; 2016, 2019) which developed indicators in assessing creative thinking habits through 'CRL's five dimensional model of creative habits of mind'. In this study, the creative habits of mind are a series of skills on the 5 dimensions of habits and sub-habits as well as attitude indicators that show the habits of individual creative mind. The five dimensions of creative habits of mind that will be developed and become a pivot in the development of creativity through the use of digital technology-based creative pedagogy include indicators of attitude 1) curiosity, 2) imaginative, 3) collaborative, 4) persistent, 5) discipline.

The second step in the design stage is to choose a comprehensive form and method of measuring creativity from various theories. Researchers in this case choose to measure creative habits of mind by using four main approaches to measuring creativity based on the framework of Rhodes (1961) and Abdulla & Cramond (2017) which are known as the 4 Ps namely Process, Person, Product and Press. Measurement of the creative habits of mind for prospective elementary school teacher students will be reviewed from 1) how the creative process occurs which indicates the creative process possessed by individuals (Process); 2) measurement of indicators and the existence of attitudes, traits and characteristics inherent in individuals (Creative Person); 3) creative products produced; and 4) climate or environment that supports the development of creativity. By the four researchers then integrated the measurements based on the existence of a five-dimensional indicator of creative habits of mind (Lucas, 2016). The final step in the instrument design stage is to design an instrument for measuring creative habits of mind in four aspects, namely creative process, creative person, creative product and creative press which accommodate attitude indicators and sub-habits from the five dimensions of creative habits of mind. The results obtained at this stage are evaluated by themselves and colleagues to improve the design results.

***Develop***

At this stage, an instrument for measuring creative habits of mind was developed using indicators of creative habits of mind and sub-habits from Lucas using four exploration instruments covering four aspects (creative process, creative person, creative product and creative press) which describe the five dimensions of creative habits of mind. (curious, imaginative, collaborative, persistent and disciplined). The assessment of creative habits of mind using these four assessments is based on a comprehensive assessment of creativity, but the correlation of the four good aspects from the creative process point of view which explores individual creative process; excavation indicators of attitude or character of creative individuals that are inherent through creative personality measurement instruments; development creative product instruments that dig into individual creative products/works; and the implementation of creative press which supports the birth of creative habits of mind. The following are the instruments developed and used in measuring the creative habits of mind for elementary school teacher candidates in this study:

**Table 2. Development of a Creative Habits of Mind Measurement Instrument**

| No | Aspect | Indicator | Measuring Instruments | Link to the Instrument |
|---|---|---|---|---|
| 1 | Creative process | The creative habits of mind are characterized by individual creative process in the process of generating ideas. Measurement indicators include originality, fluency, flexibility, and | Torrance's Alternative Uses Task (AUT) test | |

*Vol. 9, No. 3 : September 2023*
*E-ISSN: 2442-7667*
*pp. 846-857*
*Email: jklppm@undikma.ac.id*

| | | | | |
|---|---|---|---|---|
| | | elaboration. | | |
| 2 | Creative Person | The creative habits of mind are marked by the existence of indicators of attitudes, traits, and character attached to individuals that lead to 5 dimensions of creative habits of mind including curiosity, imaginative, collaborative, persistent and disciplined. | Creative Personality Inventory Questionnaire 5 Dimensions of Lucas's Creative Habits of Mind | |
| 3 | Creative Products | The creative habits of mind are characterized by its ability to produce creative products which indicate the dimensions of fulfillment of the dimensions of the creative habits of mind so it will produce creative work through a process of curiosity, imaginative, collaborative, persistent and disciplined. | OECD Product/Creative Work Assessment Rubric | |
| 4 | Creative Press | The creative habits of mind are characterized by a high creative climate in the classroom and the process of producing creative work including challenges, dynamism and liveliness, joy and humor, freedom, risk-taking, time allocation for exploring ideas and support for ideas, trust and openness, debate and conflict. negative correlation). | Ekvall's Creative Climate Questionnaire | |

The instrument for measuring creative habits of mind with the 4 aspects above is then validated by involving an expert in developing creativity and creative pedagogy and validating practitioners, namely elementary school teacher education lecturers. The results of the expert's assessment show that the instrument is in a good category or is suitable for use with several inputs. The researcher then improved the draft of the instrument for measuring the basicity of creative mind related to the adjustment of language rules and the more effective use of language in several instruments, especially instruments adapted to using foreign languages. The researcher also corrected several question items which showed ambiguity and language that could not be understood easily according to practitioners' input.

***Implementation***

At this stage the draft instrument for measuring the creative habits of mind of prospective elementary school teacher students which has been validated and corrected is then tested on prospective elementary school teacher students for the social studies of elementary school learning development course. The selection of this trial class was carried out because it has learning characteristics that involve creativity, namely in the creation of teaching ideas and creative learning in social studies in elementary school. In this course students are expected to be able to create creative products and are required to always think creatively in choosing creative learning activities, connecting these ideas with the basic competencies that must be taught, connecting with a variety of creative methods, media and sources of teaching materials. Based on this, the researchers decided to implement the use of instruments to measure creative habits of mind for students who were taking this course.

Implementation was carried out in two stages:, individual tests involving 5 students and small or limited group tests involving 10 students. Students get a creative process test using AUT. The AUT provided is adjusted to the selection of objects related to digital-based creative social studies learning and teaching alternatives. The second measurement is creative personality which is measured by using a creative habits of mind inventory questionnaire which includes the 5 dimensions of Lucas and adapts to student creativity in developing

creative teaching and learning ideas. The third measurement, namely the measurement of creative products, is carried out on students' creative works or products in the form of creative teaching and learning designs in social studies elementary schools. Finally, the measurement of the creative climate is both in the lectures that students receive during the measurement and the creative climate that is reflected in the creative learning and teaching development designs that they arrange as their creative products.

***Evaluation***

The evaluations are carried out during each stage of the research on going which is used to perfect the product. The following will describe the evaluation results of product validation activities involving expert trials with trial subjects: (1) creative pedagogy and creativity development expert validators; (2) field practitioners (elementary teacher education lecturers); (3) individual trials and supporting lecturers for social studies of elementary school learning development courses as well as small/limited group trials with student trial subjects.

***Validation of Creativity Development Experts and Creative Pedagogy and Practitioner Trials (Lecturers)***

The validation of the instruments developed was carried out by one expert validator and one practitioner validator. The expert validator in this study is an expert on creativity development and creative pedagogy. Meanwhile, the practitioner validator is a lecturer in the social studies of elementary school learning development course who also teaches microteaching and pedagogic courses. Validation activities were carried out by giving an assessment of the instruments developed through a closed questionnaire with a scale of five and an open questionnaire (to provide suggestions) with the following results:

**Table 3. Results of Expert & Practitioner Assessment of the feasibility of the instrument**

| Rated Aspect | Statement | Gain Score | |
|---|---|---|---|
| | | EV | PV |
| Content suitability | • The suitability of the question indicators with the research objectives is compatibility with the dimensions of creative thinking habits developed through digital technology-based creative pedagogy | 5 | 5 |
| | • Appropriate descriptors and scoring guidelines used | 4 | 5 |
| | • The questions represent all dimensions of creative thinking habits according to the aspects to be achieved in the research objectives | 4 | 5 |
| | • The accuracy of the statement with the expected answer | 3 | 4 |
| Problem Constructio n | • The formulation of the questions is accompanied by instructions for working on the questions that are clear and easy to understand | 4 | 5 |
| | • Formulation of questions using clear questions or commands | 4 | 4 |
| | • The formulation of the questions shows a complete statement of ideas, does not show bias | 4 | 3 |
| | • The formulation of proportional questions partially shows positive statements and there are negative statements that are balanced to reduce gambling | 5 | 5 |
| The accuracy of the language used | • Use of language according to EYD | 3 | 4 |
| | • Use language appropriate to the ability level of students | 4 | 3 |
| | • The language used is effective | 3 | 4 |
| | • The language used is easy to understand | 4 | 3 |
| | **Amount** | **47** | **50** |

* Information: EV = Expert Validator; PV= Practitioner Validator

*Vol. 9, No. 3 : September 2023*
*E-ISSN: 2442-7667*
*pp. 846-857*
*Email: jklppm@undikma.ac.id*

Based on table 3, it can be seen that the results of calculating the percentage of assessment by experts on the development of creativity and creative pedagogy on the instrument for measuring creative thinking habits is 78.33%. If interpreted in the conversion table, it can be concluded that the validation results show that the quality of the instrument for measuring creative habits of mind as a product of research and development is in the good category. Researchers also get input from experts to adjust language rules and use language more effectively in several instruments, especially instruments adapted to using a foreign language. While the results of the calculation of the percentage of validator practitioners' assessment of the instrument for measuring creative thinking habits is 83.33%. If interpreted in the conversion table, it can be concluded that the validation results show that the quality of the instrument for measuring creative habits of mind as a product of research and development is in the good category. Researchers also get input from practitioners to improve on some item items that show ambiguity and language that can't be easily understood.

***Individual trials***

After obtaining validation from experts on the development of creativity and creative pedagogy and practitioners which is lecturers, the next step is to conduct individual trials on a number of 5 students with the following results:

**Table 4. Individual Trials Results**

| Rated Aspect | Statement | Respondents | | | | |
|---|---|---|---|---|---|---|
| | | **1** | **2** | **3** | **4** | **5** |
| Content suitability | • The suitability of the question indicators with the research objectives is compatibility with the dimensions of creative habits of mind developed through digital technology-based creative pedagogy | 5 | 5 | 4 | 5 | 4 |
| | • Appropriate descriptors and scoring guidelines used | 5 | 4 | 5 | 4 | 5 |
| | • The questions represent all dimensions of creative habits of mind according to the aspects to be achieved in the research objectives | 5 | 4 | 5 | 4 | 4 |
| | • The accuracy of the statement with the expected answer | 5 | 5 | 5 | 4 | 4 |
| Problem Construction | • The formulation of the questions is accompanied by instructions for working on the questions that are clear and easy to understand | 5 | 4 | 5 | 5 | 4 |
| | • Formulation of questions using clear questions or commands | 4 | 4 | 5 | 4 | 4 |
| | • The formulation of the questions shows a complete statement of ideas, does not show bias | 4 | 4 | 4 | 4 | 4 |
| | • The formulation of proportional questions partially shows positive statements and there are negative statements that are balanced to reduce *gambling* | 5 | 5 | 5 | 4 | 5 |
| The accuracy of the language used | • Use of language according to EYD | 4 | 4 | 4 | 4 | 4 |
| | • Use language appropriate to the ability level of students | 3 | 3 | 4 | 3 | 3 |
| | • The language used is effective | 3 | 4 | 4 | 3 | 4 |
| | • The language used is easy to understand | 3 | 3 | 4 | 3 | 3 |
| | **Amount** | **51** | **49** | **54** | **47** | **48** |
| | **Percentage (%)** | **85** | **82** | **90** | **78** | **80** |
| | **Average Percentage (%)** | **82.92%** | | | | |

Based on the data in Table 4, it can be calculated that the percentage of assessment by several students in the individual test was 82.92%. If interpreted in the conversion table, it can be concluded that the validation results show that the quality of the instrument for measuring creative habits of mind as a product of research and development is in the good category. In this individual test, students as research subjects provide input through open

*Vol. 9, No. 3 : September 2023*
*E-ISSN: 2442-7667*
*pp. 846-857*
*Email: jklppm@undikma.ac.id*

questionnaires related to this instrument of creative habits of mind, namely the use of ambiguous language in the inventory instrument of creative habits of mind (creative person) and the use of language in descriptions or statements of several items in the creative climate measurement instrument (creative press) especially on the description of the 'debate' and 'conflict' components.

***Small/limited group trials***

Small/limited group trials in this study were conducted on 10 students. Product assessment was carried out during this trial by providing closed and open questionnaires with the following results:

**Table 5. Small/limited Group Trials Results**

| Rated Aspect | Statement | Many students responded with scores | | | | | Total Score | Average Score |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | |
| Content suitability | • The suitability of the question indicators with the research objectives is compatibility with the dimensions of creative habits of mind developed through digital technology-based creative pedagogy | | | 1 | 4 | 5 | 44 | 4,4 |
| | • Appropriate descriptors and scoring guidelines used | | | | 6 | 4 | 44 | 4,4 |
| | • The questions represent all dimensions of creative habits of mind according to the aspects to be achieved in the research objectives | | | | 5 | 5 | 45 | 4,5 |
| | • The accuracy of the statement with the expected answer | | | 2 | 4 | 4 | 40 | 4 |
| Problem Construction | • The formulation of the questions is accompanied by instructions for working on the questions that are clear and easy to understand | | | 1 | 5 | 4 | 43 | 4,3 |
| | • Formulation of questions using clear questions or commands | | | 2 | 4 | 4 | 40 | 4 |
| | • The formulation of the questions shows a complete statement of ideas, does not show bias | | | 2 | 5 | 3 | 41 | 4,1 |
| | • The formulation of proportional questions partially shows positive statements and there are negative statements that are balanced to reduce gambling | | | 3 | 4 | 3 | 40 | 4 |
| The accuracy of the language used | • Use of language according to EYD | | | 3 | 4 | 3 | 40 | 4 |
| | • Use language appropriate to the ability level of students | | | 2 | 5 | 3 | 41 | 4,1 |
| | • The language used is effective | | | 3 | 5 | 2 | 39 | 3,9 |
| | • The language used is easy to understand | | | 3 | 4 | 3 | 40 | 4 |
| | **Amount** | | | | | | | **49,7** |
| | **Percentage (%)** | | | | | | | **82,83** |

Based on the data in Table 5 the results of the small group test can be seen that the percentage of assessment by students through a closed questionnaire obtained a result of 82.83% with an interpretation of product feasibility in the good category. In the open

**Jurnal Kependidikan:**
**Jurnal Hasil Penelitian dan Kajian Kepustakaan di Bidang Pendidikan, Pengajaran dan Pembelajaran**
https://e-journal.undikma.ac.id/index.php/jurnalkependidikan/index
*Vol. 9, No. 3 : September 2023*
*E-ISSN: 2442-7667*
*pp. 846-857*
Email: jklppm@undikma.ac.id

questionnaire, students provide input including some typing errors and there are several statements that are not understood, especially in the habit of thinking inventory questionnaire which requires higher order thinking.

The evaluation phase of the instruments developed through research using the ADDIE model is carried out formatively and summatively. Formative evaluation is carried out to improve the instrument product for measuring creative thinking habits from the development stage to the evaluation stage. At the implementation stage with individual trials and small or limited group trials, the instrument for measuring creative habits of mind was used to measure the creative habits of mind for prospective elementary school teacher students. As a result, data on creative habits of mind for prospective elementary school teacher students were obtained both in the aspects of creative process, creative person, creative product and creative press. Students who were the subjects of the trial also then provided responses which were given through assessments on the closed questionnaire as well as providing suggestions on the open questionnaire. The results show that the instrument for measuring creative habits of mind is in the good category and is suitable for use with various inputs. The input in question is related to typing improvements and some statements that are poorly understood, especially in the habit of mind inventory questionnaire that requires higher order thinking.

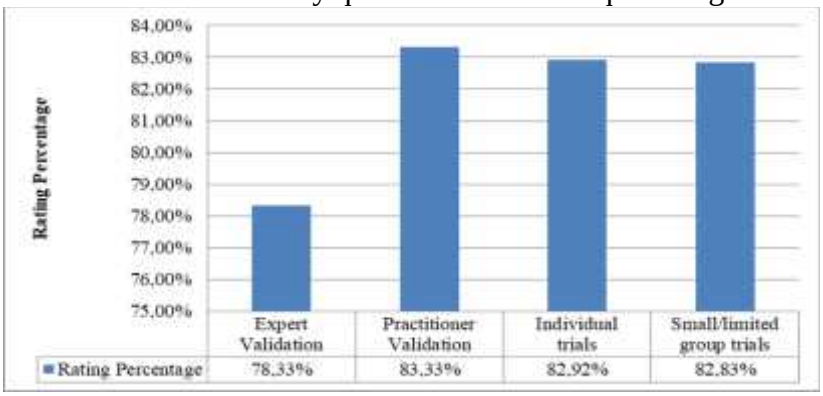


**Figure 1. Percentage diagram of the product assessment instrument for measuring creative thinking habits**

This research develops an instrument for measuring creative habits of mind which is carried out on four aspects of creative process, creative person, creative product and creative press. It is necessary to prove that these four aspects can be intact and positively interrelated as a manifestation of the level of creative thinking habits of student teacher candidates. Therefore, researchers conducted a correlation test to see the level of correlation of the four aspects. The results of the correlation test show that there is a positive correlation between the measurement results of the four aspects of creativity. It can be concluded that the assessment of the four aspects of the 4 Ps of creativity can represent creative habits of mind as a whole, as was the result of Rhodes' previous research (1961). Then, the results of this study indicate that the creative process and creative press have a positive correlation at the level of creative person and creative product. In the end, the results of creative products are the most important indicators that describe creative habits of mind. The level of creative product assessment of prospective teacher students correlates positively with the level of creative process, the level of creative personality and how creative the climate is around students (Amabile, 1983; Besemer & Treffinger, 1981; Haefele, 1962; O'Quin & Besemer, 2006).

## Conclusion

The result of the research concluded that the instrument product for measuring creative habits of mind is feasible because from the results of the analysis of the questionnaire distributed to

*Vol. 9, No. 3 : September 2023*
*E-ISSN: 2442-7667*
*pp. 846-857*
*Email: jklppm@undikma.ac.id*

students who have used the measurement instrument, it is found that the level of feasibility of the instrument according to experts is 78.33%, the level the feasibility of the instrument according to practitioners was 83.33%, the feasibility level of the individual student limited test was 82.92%, the limited test feasibility level was obtained at 82.83% meaning that the perception of the validator, lecturer in charge of the course, and students towards the use of the instrument for measuring creative habits of mind. The results of the correlation test also show that there is a positive correlation between the measurement results of the four aspects of creativity. It can be concluded that the assessment of the four aspects of the 4 Ps of creativity can represent creative habits of mind as a whole.

**Recommendation**

Researchers recommend the use of this instrument for use by: 1) institutions that produce educators for prospective elementary school teachers; 2) lecturers and researchers who develop and measure the creative mind of prospective teacher students; 3) schools that need information about the results of measuring the habits of mind for the prospective teachers they will recruit; and 4) prospective elementary school teacher students who need information about their level of creative habits of mind. This instrument can be used to measure the creative habits of mind for prospective teachers, especially in developing learning ideas. The instrument consists of four tests including: a) creative process test, b) creative person test, c) creative product test, and d) creative press test. The four instruments can be used as a whole to measure the creative habits of mind for prospective teachers comprehensively or used separately to adjust the objectives to measure one of the four aspects that are measured as part of the creative habits of mind.

**References**

Abdulla, A. M., & Cramond, B. (2017). After six decades of systematic study of creativity: What do teachers need to know about what it is and how it is measured? *Roeper Review*, *39*(1), 9–23.

Agaoglu, O., & DemIr, M. (2020). The integration of 21st century skills into education: an evaluation based on an activity example. *Journal of Gifted Education and Creativity*, *7*(3), 105–114.

Amabile, T. M. (1983). The social psychology of creativity: A componential conceptualization. *Journal of Personality and Social Psychology*, *45*(2), 357.

Besemer, S. P., & Treffinger, D. J. (1981). Analysis of creative products: review and synthesis. *The Journal of Creative Behavior*.

Branch, R. M. (2009). *Instructional design: The ADDIE approach* (Vol. 722). Springer.

Care, E., Griffin, P., & McGaw, B. (2012). *Assessment and teaching of 21st century skills*. Springer.

Cigerci, F. M. (2020). Primary School Teacher Candidates and 21st Century Skills. *International Journal of Progressive Education*, *16*(2), 157–174.

Ekvall, G. (1996). Organizational climate for creativity and innovation. *European Journal of Work and Organizational Psychology*, *5*(1), 105–123.

Griffin, P., Care, E., & McGaw, B. (2012). The changing role of education and schools. *Assessment and Teaching of 21st Century Skills*, 1–15.

Guilford, Joan P. (1973). *Characteristics of Creativity.*

Guilford, Joy P. (1957). Creative abilities in the arts. *Psychological Review*, *64*(2), 110.

Guilford, Joy P. (1967). Creativity: Yesterday, today and tomorrow. *The Journal of Creative Behavior*, *1*(1), 3–14.

*Vol. 9, No. 3 : September 2023*
*E-ISSN: 2442-7667*
*pp. 846-857*
*Email: jklppm@undikma.ac.id*

Guilford, Joy Paul. (1950). Creativity. *American Psychologist*, *5*(9), 444.
Guilford, Joy Paul. (1968). *Intelligence, creativity, and their educational implications*. Edits Pub.
Guilford, Joy Peter. (2017). Creativity: A quarter century of progress. In *Perspectives in creativity* (pp. 37–59). Routledge.
Haefele, J. W. (1962). Creativity and innovation. *(No Title)*.
Howells, K. (2018). *The future of education and skills: education 2030: the future we want*.
Kautz, T., Heckman, J. J., Diris, R., Ter Weel, B., & Borghans, L. (2014). *Fostering and measuring skills: Improving cognitive and non-cognitive skills to promote lifetime success*.
Kivunja, C. (2014). Innovative pedagogies in higher education to become effective teachers of 21st century skills: Unpacking the learning and innovations skills domain of the new learning paradigm. *International Journal of Higher Education*, *3*(4), 37–48.
Lin, Y. S. (2011). Fostering creativity through education--a conceptual framework of creative pedagogy. *Creative Education*, *2*(03), 149.
Lucas, B. (2016). A five-dimensional model of creativity and its assessment in schools. *Applied Measurement in Education*, *29*(4), 278–290.
Lucas, B. (2019). Teaching and assessing creativity in schools in England. *Impact Journal*, *7*(1), 5–8.
Lucas, B., Claxton, G., & Spencer, E. (2013). *Progression in student creativity in school: First steps towards new forms of formative assessments*.
Marzano, R. J. (1992). *A different kind of classroom: Teaching with dimensions of learning.* ERIC.
Maulidah, N., & Amelia, D. (2022). Kebiasaan Berpikir Kreatif Mahasiswa Calon Guru Sekolah Dasar Ditinjau dari Indeks Prestasi Kumulatif. *Jurnal Elementaria Edukasia*.
Morrison, G. R., Ross, S. J., Morrison, J. R., & Kalman, H. K. (2019). *Designing effective instruction*. John Wiley & Sons.
Mulyatiningsih, E. (2012). Metodologi Penelitian Terapan. *Yogyakarta: Alfabeta*.
O'Quin, K., & Besemer, S. P. (2006). Using the creative product semantic scale as a metric for results-oriented business. *Creativity and Innovation Management*, *15*(1), 34–44.
P21. (2009). *P21 Framework Definitions*. https://doi.org/ERIC Number ED519462
P21. (2019). *Framework For 21st Century Learning Definitions*. http://static.battelleforkids.org/documents/p21/P21_Framework_DefinitionsBFK.pdf
Rhodes, M. (1961). An analysis of creativity. *The Phi Delta Kappan*, *42*(7), 305–310.
Robinson, K. (2006). *Do schools kill creativity*.
Robinson, K., & Aronica, L. (2015). *Creative schools: Revolutionizing education from the ground up*. Penguin UK.
Robinson, K., & Aronica, L. (2016). *Creative schools: The grassroots revolution that's transforming education*. Penguin books.
Saxena, S. (2015). How do you teach the 4Cs to students (Part-1): Creativity and innovation. *Nioda Dehli NCR: Amity University*.
Supriatna, N., & Maulidah, N. (2020). Pedagogi kreatif: menumbuhkan kreativitas dalam pembelajaran sejarah dan ips. *Remaja Rosdakarya*.
Vincent-Lancrin, S., González-Sancho, C., Bouckaert, M., de Luca, F., Fernández-Barrerra, M., Jacotin, G., Urgel, J., & Vidal, Q. (2019). *Fostering Students' Creativity and Critical Thinking: What It Means in School. Educational Research and Innovation.* ERIC.