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# Exploration of Differences In Students Creative Thinking Abilities Viewed from Perspective Gender and Domicile: Rasch Model Analysis

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**ABSTRACT**

The purpose of this study was to explore differences in students creative thinking abilities based on gender and domicile. The research method used was descriptive quantitative. Sampling used proportional random sampling technique at Public Junior High Schools in South Konawe Regency. The research instrument used a creative thinking test as primary data. The data analysis technique used the winsteps program with scalogram analysis. The results showed that female students tended to be superior in fluency, originality, and elaboration, both at very high and low levels of creative thinking ability, while male students showed superiority in flexibility. This difference can be influenced by biological, psychological, and social factors that play a role in cognitive development and creativity. In addition, differences in creative thinking abilities were also found based on domicile. Urban students are superior in several indicators at very high levels of creative thinking ability, but are more susceptible to decreased creativity at very low levels compared to rural students. Environmental factors such as access to educational resources, intellectual stimulation, and higher social support in urban areas play a role in this difference. Overall, these findings confirm that gender and domicile significantly influence students creative thinking abilities.

KEYWORDS

Exploration, creative thinking, rasch model



## 1. Introduction

Creative thinking is a crucial competency in the era of globalization, particularly in Indonesian junior high school (SMP) education where students are developing higher-order thinking skills. This ability supports problem solving and serves as a psychological foundation for scientific, technological, and societal advancement (Shen et al., 2015). Studies show that creative thinking contributes directly to innovation, which drives economic growth and social welfare (Beghetto & Kaufman, 2014; Kim, 2011). Within the implementation of the Merdeka Curriculum, creativity enables students to respond adaptively to learning challenges through student-centered and exploratory learning approaches. Furthermore, a creativity-supportive learning environment enhances students' motivation and creative thinking skills, which is essential for preparing the younger generation to face global challenges (Richardson & Mishra, 2018 ; Suyuti, 2024) .

Creative thinking allows individuals to view problems from multiple perspectives, generate diverse and unique solutions, and develop ideas that have never existed before (Sternberg, 2006). Conceptually, this ability can be operationalized through several key indicators, namely fluency, flexibility, originality, and elaboration. Fluency refers to the ability to produce a large number of ideas or responses in a given situation, while flexibility reflects the capacity to shift perspectives and generate solutions across different categories or approaches. Originality emphasizes the novelty and uniqueness of ideas that differ from common or conventional responses, whereas elaboration involves the ability to develop ideas in a detailed, systematic, and coherent manner. Further research by Runco & Jaeger, (2012) emphasizes that creativity is not merely about generating new ideas, but also about the ability to connect and refine existing ideas in innovative and effective ways. Therefore, integrating creative thinking development-

measured through these four indicators-into the education curriculum is essential to ensure that students are adequately prepared to face the dynamic and rapidly changing demands of the future world of work.

Gender differences have long been a focus of educational research, particularly in relation to creativity. Matud et al., (2007) reported that gender differences influence students' thinking patterns and creative approaches, with males and females showing distinct tendencies in divergent and convergent thinking. More recent studies further suggest that gender-related differences in creativity vary across domains, where females tend to excel in creativity involving empathy, communication, and collaboration, while males show advantages in more technical and analytical aspects (Nielsen et al., 2018) . However, other empirical findings indicate inconsistent results, with several studies reporting minimal or no significant gender differences in overall creative thinking ability, or showing that gender advantages depend strongly on context, task characteristics, and educational environment. These inconsistencies highlight a clear research gap regarding how gender differences in creative thinking manifest across specific indicators of creativity and within particular educational contexts. Therefore, further investigation is needed to clarify these differences, especially by examining creative thinking through multiple indicators and in underexplored settings such as junior high school education, where developmental and contextual factors may influence creativity differently.

In addition, students' place of residence, whether in urban or rural areas, provides different environmental backgrounds that can influence the development of creative abilities. More dynamic urban environments and access to better educational resources often provide greater stimuli for the development of creativity compared to rural environments. Research shows that students who live in urban areas tend to have greater access to extracurricular activities and self-development opportunities that can encourage their creativity (Guichard & Grande, 2018) . However, rural environments also offer advantages in terms of proximity to nature and a calm atmosphere, which can be a source of inspiration for students' creativity (Al-Suleiman, 2009).

This study aims to explore the differences in students' creative thinking abilities based on gender and domicile perspectives using the rasch model. This method, which is part of the item response theory, is able to provide a more detailed picture of students' abilities and the validity of the instruments used. The results of this analysis are expected to provide deeper insight into how demographic factors can influence students' creative thinking abilities, as well as provide a basis for developing more inclusive and effective educational strategies.

Through this analysis, it is hoped that a more comprehensive picture can be obtained regarding how gender and domicile factors affect students' creative thinking skills. A deeper understanding of these dynamics is essential given the significant role played by creativity in education and the development of 21st century skills. Creativity is not only needed in an academic context, but also in equipping students to face challenges in the increasingly complex and dynamic world of work and everyday life (Lucas & Spencer, 2017)

This study is expected to provide an important contribution to the educational literature by presenting relevant empirical data on the role of gender and domicile in the development of students' creative thinking skills. The results of this study are expected to be a strong basis for formulating more inclusive and effective educational strategies, which are able to improve the creative thinking skills of students from various backgrounds. This is in line with the demands to create a fair and equitable learning environment, which takes into account individual and environmental differences as important factors in the learning process (Robinson, 2016)

This introduction not only provides an overview of the importance of creative thinking skills in the context of modern education, but also identifies factors that may influence their development, such as gender and domicile. In addition, this section also emphasizes the objectives of the research to be conducted, namely to explore and analyze how these two factors interact in influencing student creativity, as well as to assess the effectiveness of the analysis methods used in this study.

Through a systematic analytical approach, this research aims to produce recommendations that can be implemented in educational policies, with the ultimate goal of improving the quality of education that is responsive to diversity and individual needs. Gender differences are often associated with variations in ways of thinking and approaching creative tasks. Some studies show that there are significant differences in creative thinking abilities between male and female students, while other studies find the opposite results or do not find significant differences. This raises questions about the extent to which gender influences students' creative thinking abilities.

Apart from that, students' domicile, whether in urban or rural areas, can also have a significant influence on creative thinking abilities. Urban environments, which are more dynamic and have wider access to various educational and technological resources, are often assumed to provide better stimulation of student creativity compared to rural environments. However, there is also an argument that the quieter, more natural environment of the countryside can provide greater scope for creative development.

## 2. Method

The research method used was comparative research, namely research that aims to comparing two or more objects, variables, or phenomena to find similarities and differences, and to reveal the cause-and-effect relationships behind them. This research method is a fact-finding with the right interpretation, by studying existing problems and procedures that apply in certain situations, including the relationship between activities, attitudes, views, and ongoing processes and the influence of a phenomenon, by trying to describe the object or subject being studied according to what it is (Syahrizal & Jailani, 2023). Descriptive research describes what it is about a variable, symptom or situation (Arikunto, 2000).

The subjects in this research were 98 junior high school students in South Konawe Regency. The selection of school samples was obtained using proportional random sampling technique. The three selected junior high schools in South Konawe Regency have different domiciles, namely rural and urban.

### 2.1 Instruments and procedures

The research instrument used a descriptive test question sheet and interview guidelines. The test is used to determine the results of students creative thinking. The test used in this research uses test questions consisting of 10 questions to measure students creative thinking abilities which include creative thinking indicators consisting of: fluency, flexibility, originality and elaboration. The research procedure used in this research is preparing questions and interview guidelines. Determination of test reliability and respondent reliability of the test is seen from the summary statistics results of the Winstep program so that instruments can be categorized regarding the relationship between test items and respondents.

### 2.2 Data Analysis

Data analysis in this research is quantitative and qualitative descriptive analysis. The data analysis technique uses the Winsteps program to analyze Summary Statistics, Person Item Map, Person Fit Order, and Scalograms.

1 Summary statistics, namely summary statistics that can detect and determine the reliability of questions, namely the relationship between items and people (using Cronbach-α)
2 Person Item Map which aims to determine the level of student learning independence
3 Person measure Fit is carried out to find out whether there are students who do not meet the criteria or are misfit.
4 Scalograms, namely detecting test results based on a scoring rubric for each indicator of students creative thinking abilities. The indicators measured in the research are fluency, flexibility, originality and elaboration
5 Measuring creative thinking abilities for each aspect (fluency, flexibility, originality and elaboration). For example, the level of creative thinking ability for each aspect is P, then:

$$P = \frac{\sum A}{\sum B} \times 100$$

Information:
ΣA: total score per aspect obtained by students;
ΣB: maximum number of scores for each aspect (n)

## 3. Results and Discussion

### 3.1 Results

#### a. Summary statistics

Summary statistics are used to see the relationship between the person and the test items used to measure creative thinking abilities contained in the test with creative thinking indicators, namely fluency, flexibility, originality and elaboration. Summary statistical results can be seen in table 1 summary statistics.

**Table 1.** Summary Statistic

| | TOTAL SCORE | COUNT | MEASURE | MODEL S.E. | INFIT MNSQ | INFIT ZSTD | OUTFIT MNSQ | OUTFIT ZSTD |
|---|---|---|---|---|---|---|---|---|
| MEAN | 30.2 | 10.0 | .79 | .41 | .99 | -.04 | 1.00 | -.01 |
| SEM | .4 | .0 | .07 | .01 | .04 | .12 | .05 | .12 |
| P.SD | 4.4 | .0 | .69 | .08 | .44 | 1.16 | .46 | 1.15 |
| S.SD | 4.4 | .0 | .69 | .08 | .44 | 1.17 | .46 | 1.16 |
| MAX. | 38.0 | 10.0 | 2.43 | .71 | 2.15 | 2.47 | 2.25 | 2.32 |
| MIN. | 20.0 | 10.0 | -.60 | .35 | .20 | -2.90 | .19 | -2.94 |
| REAL RMSE | .45 | TRUE SD | .53 | SEPARATION | 1.18 | Person RELIABILITY | .58 | |
| MODEL RMSE | .41 | TRUE SD | .55 | SEPARATION | 1.33 | Person RELIABILITY | .64 | |
| S.E. OF Person MEAN = .07 | | | | | | | | |

Person Raw Score-To-Measure Correlation = .98
Cronbach Alpha (KR-20) Person Raw Score "Test" Reliability = .62 SEM = 2.72

Based on summary statistics, person reliability is 0.64 and Cronbach Alpha is 0.62, which means that students have sufficient ability to take the test and there is sufficient interaction between people and test items as a whole (Sumintono & Widhiarso, 2015).

#### b. Person Item Map

The Person Item Map (Figure 1) illustrates tendencies in the distribution of students' creative thinking abilities. Overall, the results indicate a broad spread of individual ability levels, ranging from very high to very low. Tendencies across groups and levels for each creative thinking indicator are further reflected in the scalogram outputs generated by the Winsteps program.

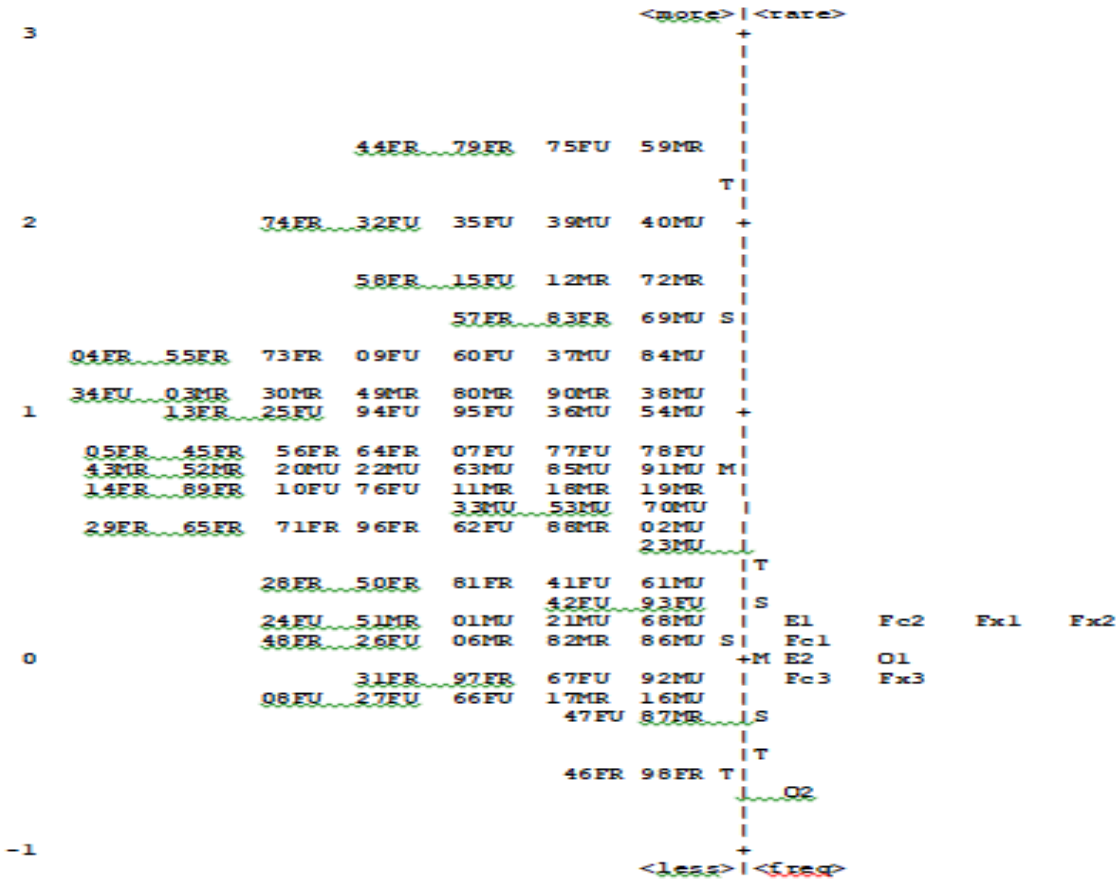


**Figure 1.** Person Item Map

Note:
FR = Female from rural areas; FU = Female from urban areas
MR = Male from rural areas; MU = Male from urban areas

**c. Person measure Fit**

Person measure Fit is carried out to find out whether there are students who do not meet the criteria or are misfit to continue with the analysis of students' creative thinking test results. The criteria used to check fit and misfit people is the INFIT MNSQ value of each person. The description is that the average value and standard deviation are added together, then compared, a logit value that is greater than this value indicates a misfit person. Based on the person measure Fit table, the misfit order is the number of person logits from the Mean and SD, namely: 0.99 + 0.44 = 1.43, so this criterion is compared with the logit which is greater than 1.43. This can be seen by students who are misfit in table 2 below.

**Table 2**. Person is misfit

| *No* | *Person* | *Infit MNSQ* | *Criteria* | *Information* |
|---|---|---|---|---|
| 1 | FR57 | 1,68 | Infit MNSQ > 1,43 | Misfit |
| 2 | FR64 | 2,15 | Infit MNSQ > 1,43 | Misfit |
| 3 | FU07 | 1,97 | Infit MNSQ > 1,43 | Misfit |
| 4 | FR13 | 1,86 | Infit MNSQ > 1,43 | Misfit |
| 5 | MU38 | 1,49 | Infit MNSQ > 1,43 | Misfit |
| 6 | FR04 | 1,68 | Infit MNSQ > 1,43 | Misfit |
| 7 | FU60 | 1,65 | Infit MNSQ > 1,43 | Misfit |
| 8 | MR87 | 1,65 | Infit MNSQ > 1,43 | Misfit |
| 9 | MR43 | 1,51 | Infit MNSQ > 1,43 | Misfit |
| 10 | FU24 | 1,63 | Infit MNSQ > 1,43 | Misfit |
| 11 | FR50 | 1,63 | Infit MNSQ > 1,43 | Misfit |

| No | Person | Infit MNSQ | Criteria | Information |
|---|---|---|---|---|
| 12 | FR05 | 1,61 | Infit MNSQ > 1,43 | Misfit |
| 13 | FR45 | 1,61 | Infit MNSQ > 1,43 | Misfit |
| 14 | FU77 | 1,60 | Infit MNSQ > 1,43 | Misfit |
| 15 | FU93 | 1,58 | Infit MNSQ > 1,43 | Misfit |
| 16 | FU42 | 1,57 | Infit MNSQ > 1,43 | Misfit |
| 17 | MR49 | 1,25 | Infit MNSQ > 1,43 | Misfit |
| 18 | MU02 | 1,54 | Infit MNSQ > 1,43 | Misfit |
| 19 | FU62 | 1,54 | Infit MNSQ > 1,43 | Misfit |
| 20 | FU09 | 1,51 | Infit MNSQ > 1,43 | Misfit |
| 21 | FR58 | 1,51 | Infit MNSQ > 1,43 | Misfit |
| 22 | MR82 | 1,47 | Infit MNSQ > 1,43 | Misfit |
| 23 | FR65 | 1,46 | Infit MNSQ > 1,43 | Misfit |

Based on the Person Measure Fit results, there were 23 students who were misfit, namely data that there were 9 female students from the rural; 8 female students from the urban; 4 male students from the rural; and 2 male students from the urban, so that the subjects who will look at thinking abilities are 75 students.

**d. Scalograms**

Scalograms to detect test results based on a scoring rubric for each indicator of students' creative thinking abilities. The results obtained are as follows:

***Gender of female students living in rural areas***

**Table 3.** Results of scalograms for women living in rural areas

| No | Student | O2 | FC3 | FX3 | O1 | E2 | FC1 | FC2 | FX1 | FX2 | E1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 44FR | 4 | 4 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 |
| 2 | 79FR | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 3 |
| 3 | 74FR | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 3 | 3 | 4 |
| 4 | 83FR | 4 | 3 | 4 | 4 | 3 | 3 | 3 | 4 | 4 | 3 |
| 5 | 55FR | 2 | 4 | 4 | 2 | 4 | 4 | 4 | 4 | 3 | 3 |
| 6 | 73FR | 4 | 4 | 3 | 4 | 4 | 4 | 2 | 2 | 3 | 4 |
| 7 | 56FR | 3 | 4 | 2 | 3 | 2 | 4 | 4 | 3 | 3 | 3 |
| 8 | 14FR | 4 | 2 | 2 | 4 | 4 | 3 | 3 | 2 | 2 | 4 |
| 9 | 89FR | 2 | 3 | 3 | 3 | 4 | 3 | 3 | 2 | 3 | 4 |
| 10 | 29FR | 3 | 3 | 3 | 4 | 2 | 3 | 3 | 2 | 3 | 3 |
| 11 | 71FR | 4 | 2 | 2 | 3 | 4 | 3 | 3 | 2 | 2 | 4 |
| 12 | 96FR | 4 | 3 | 3 | 4 | 2 | 2 | 3 | 3 | 3 | 2 |
| 13 | 28FR | 4 | 3 | 3 | 4 | 2 | 2 | 3 | 3 | 3 | 1 |
| 14 | 81FR | 3 | 2 | 4 | 3 | 2 | 2 | 2 | 4 | 4 | 2 |
| 15 | 48FR | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 3 |
| 16 | 31FR | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 2 | 3 |
| 17 | 97FR | 4 | 3 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 1 |
| 18 | 46FR | 3 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 |
| 19 | 98FR | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 3 |

Based on the gender scalogram table 3 for female who live in rural, it can be seen that the average creative thinking ability at a very high level on the fluency indicator is 5 students, flexibility 5 students, originality 7 students and elaboration 6 students. Tabulation of creative thinking ability for each indicator in full at very high, high, medium, low and very low levels can be seen in table 7 and figure 2. Based on Figure 2, the graph shows that female students who live in rural areas generally have mastery of students creative thinking skills on the originality indicator.

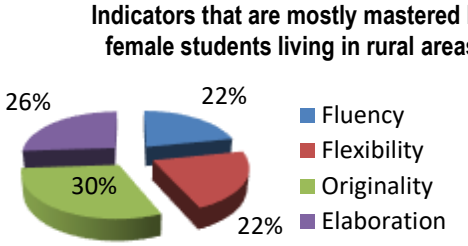


**Figure 2.** Graph of indicators of creative thinking that are mostly mastered by female students living in rural areas

**Gender of male students living in rural areas**

**Table.4.** Results of scalograms for male living in rural areas

| *No* | *Student* | *O2* | *FC3* | *FX3* | *O1* | *E2* | *FC1* | *FC2* | *FX1* | *FX2* | *E1* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 59MR | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 3 |
| 2 | 12MR | 4 | 3 | 4 | 4 | 3 | 3 | 3 | 4 | 4 | 4 |
| 3 | 72MR | 4 | 4 | 3 | 4 | 3 | 4 | 4 | 3 | 3 | 4 |
| 4 | 03MR | 4 | 2 | 4 | 4 | 3 | 2 | 3 | 4 | 4 | 3 |
| 5 | 30MR | 4 | 4 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 3 |
| 6 | 80MR | 3 | 4 | 4 | 3 | 3 | 4 | 3 | 4 | 4 | 1 |
| 7 | 90MR | 4 | 3 | 3 | 4 | 4 | 2 | 3 | 3 | 3 | 4 |
| 8 | 52MR | 3 | 4 | 3 | 1 | 3 | 4 | 4 | 3 | 3 | 3 |
| 9 | 11MR | 4 | 3 | 2 | 3 | 4 | 2 | 3 | 2 | 3 | 4 |
| 10 | 18MR | 2 | 3 | 4 | 2 | 3 | 3 | 3 | 4 | 3 | 3 |
| 11 | 19MR | 4 | 3 | 2 | 4 | 3 | 2 | 3 | 3 | 3 | 3 |
| 12 | 88MR | 4 | 2 | 3 | 3 | 4 | 2 | 3 | 3 | 3 | 2 |
| 13 | 51MR | 4 | 2 | 2 | 4 | 2 | 3 | 3 | 2 | 2 | 2 |
| 14 | 06MR | 3 | 2 | 2 | 4 | 2 | 2 | 3 | 2 | 2 | 3 |
| 15 | 17MR | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 1 |

Based on the gender scalogram table 4 for male who live in rural, it can be seen that the average creative thinking ability at a very high level on the fluency indicator is 5 students, flexibility 5 students, originality 7 students and elaboration 2 students. Tabulation of creative thinking ability for each indicator in full at very high, high, medium, low and very low levels can be seen in table 7 and figure 3

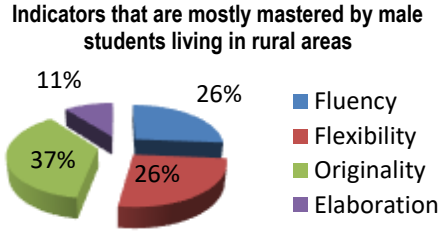


**Figure 3.** Graph of creative thinking indicators that are mostly mastered by male students living in rural areas

Based on Figure 3, the graph shows that male students who live in rural areas generally have mastery of students' creative thinking skills on the originality indicator.

**Gender of female students living in urban areas**

Based on the gender scalograms table 5 for female who live in the urban, it can be seen that the average creative thinking ability at a very high level on the fluency indicator is 8 students, flexibility is 2 students, originality is 10 students and elaboration is 3 students.

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Table.5. Results of Scalograms for female living in urban areas

| No | Siswa | O2 | FC3 | FX3 | O1 | E2 | FC1 | FC2 | FX1 | FX2 | E1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 75FU | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 3 |
| 2 | 32FU | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 3 | 3 | 4 |
| 3 | 35FU | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 3 | 3 |
| 4 | 15FU | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |
| 5 | 34FU | 4 | 4 | 3 | 4 | 2 | 4 | 4 | 3 | 3 | 2 |
| 6 | 25FU | 4 | 4 | 2 | 4 | 3 | 4 | 3 | 2 | 3 | 3 |
| 7 | 94FU | 4 | 2 | 3 | 4 | 4 | 2 | 3 | 3 | 3 | 4 |
| 8 | 95FU | 4 | 3 | 3 | 4 | 4 | 3 | 3 | 2 | 3 | 3 |
| 9 | 78FU | 2 | 4 | 4 | 2 | 2 | 4 | 4 | 4 | 2 | 3 |
| 10 | 10FU | 4 | 3 | 3 | 4 | 4 | 3 | 3 | 1 | 1 | 4 |
| 11 | 76FU | 4 | 4 | 2 | 2 | 2 | 4 | 4 | 3 | 3 | 2 |
| 12 | 41FU | 4 | 2 | 4 | 2 | 4 | 2 | 2 | 4 | 2 | 2 |
| 13 | 26FU | 4 | 2 | 3 | 4 | 3 | 2 | 2 | 1 | 1 | 3 |
| 14 | 67FU | 4 | 3 | 2 | 3 | 2 | 3 | 3 | 1 | 1 | 2 |
| 15 | 08FU | 2 | 3 | 2 | 3 | 4 | 1 | 1 | 2 | 3 | 2 |
| 16 | 27FU | 3 | 3 | 2 | 1 | 2 | 3 | 3 | 2 | 2 | 2 |
| 17 | 66FU | 3 | 2 | 2 | 4 | 3 | 2 | 2 | 2 | 2 | 1 |
| 18 | 47FU | 4 | 3 | 2 | 2 | 2 | 3 | 3 | 1 | 1 | 1 |

Tabulation of creative thinking ability for each indicator in full at very high, high, medium, low and very low levels can be seen in table 7 dan figure 4.

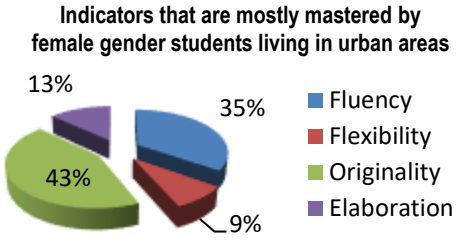


**Figure 4.** Graph of indicators that are mostly mastered by female gender students living in urban areas.

Based on Figure 4, the graph shows that female students who live in urban areas generally have mastery of students creative thinking skills on the originality indicator.

**Gender of male students living in urban areas**

**Table.6.** Results of scalograms for male students living in urban areas

| No | Student | O2 | FC3 | FX3 | O1 | E2 | FC1 | FC2 | FX1 | FX2 | E1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 39MU | 4 | 4 | 4 | 4 | 2 | 4 | 4 | 4 | 4 | 3 |
| 2 | 40MU | 3 | 4 | 4 | 3 | 4 | 4 | 3 | 4 | 4 | 4 |
| 3 | 69MU | 4 | 3 | 4 | 4 | 3 | 3 | 3 | 4 | 4 | 3 |
| 4 | 37MU | 3 | 3 | 4 | 2 | 3 | 4 | 4 | 4 | 4 | 3 |
| 5 | 84MU | 4 | 3 | 4 | 4 | 3 | 2 | 3 | 4 | 4 | 3 |
| 6 | 36MU | 4 | 4 | 2 | 2 | 3 | 4 | 4 | 3 | 3 | 3 |
| 7 | 54MU | 3 | 4 | 3 | 2 | 3 | 4 | 4 | 3 | 3 | 3 |
| 8 | 20MU | 3 | 3 | 4 | 1 | 3 | 3 | 3 | 4 | 4 | 3 |
| 9 | 22MU | 4 | 3 | 3 | 4 | 2 | 4 | 4 | 3 | 3 | 1 |
| 10 | 63MU | 4 | 2 | 4 | 4 | 2 | 2 | 3 | 4 | 4 | 2 |
| 11 | 85MU | 3 | 3 | 4 | 1 | 4 | 3 | 3 | 4 | 3 | 3 |
| 12 | 91MU | 4 | 3 | 2 | 4 | 4 | 3 | 3 | 2 | 2 | 4 |
| 13 | 33MU | 4 | 4 | 3 | 4 | 3 | 4 | 2 | 2 | 3 | 1 |

| No | Student | O2 | FC3 | FX3 | O1 | E2 | FC1 | FC2 | FX1 | FX2 | E1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | 53MU | 4 | 4 | 3 | 3 | 3 | 4 | 2 | 2 | 3 | 3 |
| 15 | 70MU | 4 | 4 | 3 | 4 | 3 | 4 | 3 | 1 | 1 | 3 |
| 16 | 23MU | 3 | 4 | 2 | 3 | 2 | 4 | 4 | 2 | 2 | 3 |
| 17 | 61MU | 2 | 2 | 4 | 2 | 3 | 2 | 2 | 4 | 4 | 3 |
| 18 | 01MU | 2 | 2 | 4 | 2 | 2 | 2 | 2 | 4 | 4 | 3 |
| 19 | 21MU | 2 | 4 | 3 | 2 | 2 | 4 | 2 | 2 | 3 | 2 |
| 20 | 68MU | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 3 |
| 21 | 86MU | 4 | 2 | 2 | 4 | 2 | 2 | 2 | 2 | 2 | 3 |
| 22 | 92MU | 4 | 2 | 2 | 3 | 3 | 2 | 2 | 1 | 1 | 4 |
| 23 | 16MU | 4 | 3 | 3 | 2 | 2 | 1 | 1 | 2 | 3 | 2 |

Based on the gender scalogram table 6 for male who live in urban, it can be seen that the average creative thinking ability at a very high level on the fluency indicator is 8 students, flexibility 10 students, originality 9 students and elaboration 2 students. Tabulation of creative thinking ability for each indicator in full at very high, high, medium, low and very low levels can be seen in table 7 dan figure 5.

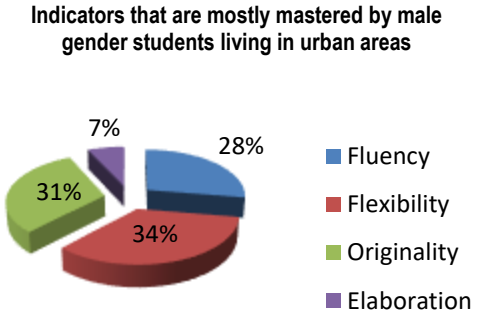


**Figure 5**. Graph of indicators that are mostly mastered by male gender students living in urban areas

Based on figure 5, the graph shows that male students who live in rural areas generally have mastery of students creative thinking skills on the flexibility indicator.

**Gender-Domisili**

On the whole, the table of scalogram results for all genders and domiciles can be seen in table 7 below

**Table 7.** Level of Creative Thinking Ability for each indicator based on student gender-domicile

| *No* | *Indicators of creative thinking* | *ΣB (n)* | *Cronbach-α* | *Level of Creative Thinking Ability for each indicator* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | *Very high* | | *High* | | *Medium* | | *Low* | | *Very Low* | |
| | | | | *ΣA* | *P* | *ΣA* | *P* | *ΣA* | *P* | *ΣA* | *P* | *ΣA* | *P* |
| 1 | Fluency | | | | | | | | | | | | |
| | *FR* | 19 | 0,87 | 5 | 26.32 | 1 | 5.26 | 10 | 52.63 | 0 | 0.00 | 3 | 15.79 |
| | *MR* | 15 | 0,86 | 5 | 33.33 | 0 | 0.00 | 6 | 40.00 | 3 | 20.00 | 1 | 6.67 |
| | *FU* | 18 | 0,95 | 8 | 44.44 | 0 | 0.00 | 5 | 27.78 | 1 | 5.56 | 4 | 22.22 |
| | *MU* | 23 | 0,81 | 8 | 34.78 | 3 | 13.04 | 6 | 26.09 | 1 | 4.35 | 5 | 21.74 |
| 2 | Flexibility | | | | | | | | | | | | |
| | *FR* | 19 | 0,93 | 5 | 26.32 | 0 | 0.00 | 3 | 15.79 | 5 | 26.32 | 6 | 31.58 |
| | *MR* | 15 | 0,95 | 5 | 33.33 | 0 | 0.00 | 7 | 46.67 | 1 | 6.67 | 2 | 13.33 |
| | *FU* | 18 | 0,77 | 2 | 11.11 | 2 | 11.11 | 6 | 33.33 | 2 | 11.11 | 6 | 33.33 |
| | *MU* | 23 | 0,93 | 10 | 43.48 | 0 | 0.00 | 7 | 30.43 | 1 | 4.35 | 5 | 21.74 |
| 3 | Originality | | | | | | | | | | | | |
| | *FR* | 19 | 0,65 | 7 | 36.84 | 3 | 15.79 | 3 | 15.79 | 4 | 21.05 | 2 | 10.53 |
| | *MR* | 15 | 0,75 | 7 | 46.67 | 4 | 26.67 | 1 | 6.67 | 1 | 6.67 | 2 | 13.33 |
| | *FU* | 18 | 0,53 | 10 | 55.56 | 2 | 11.11 | 3 | 16.67 | 1 | 5.56 | 2 | 11.11 |
| | *MU* | 23 | 0,73 | 9 | 39.13 | 2 | 8.70 | 4 | 17.39 | 3 | 13.04 | 5 | 21.74 |
| 4 | Elaboration | | | | | | | | | | | | |

| No | Indicators of creative thinking | ΣB (n) | Cronbach-α | Level of Creative Thinking Ability for each indicator | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Very high | | High | | Medium | | Low | | Very Low | |
| | | | | ΣA | P | ΣA | P | ΣA | P | ΣA | P | ΣA | P |
| | FR | 19 | 0,87 | 6 | 31.58 | 1 | 5.26 | 2 | 10.53 | 5 | 26.32 | 5 | 26.32 |
| | MR | 15 | 0,58 | 2 | 13.33 | 2 | 13.33 | 7 | 46.67 | 1 | 6.67 | 3 | 20.00 |
| | FU | 18 | 0,71 | 3 | 16.67 | 3 | 16.67 | 5 | 27.78 | 1 | 5.56 | 6 | 33.33 |
| | MU | 23 | 0,69 | 2 | 8.70 | 2 | 8.70 | 10 | 43.48 | 4 | 17.39 | 5 | 21.74 |

In table 7 it can be seen that Cronbach-α or the interaction between people and test items as a whole varies greatly for each indicator of students' creative thinking. Poor person and test item interactions are an indicator of originality for female who live in rural areas and elaboration for male in rural areas, while very good person and test item interactions are male students from rural on the flexibility indicator and female students living in urban on the flexibility indicator. fluency indicator.

### 3.2 Discussion

This research aims to explore differences in students' creative thinking abilities based on different genders and domiciles. Gender differences can give an idea that women and men have different creative thinking abilities. According to Piaw, (2014) the research results reflect the large influence of gender on the five components of creative thinking abilities. These findings support the results of Jones et al., (2003) that there are differences in learning styles between male and female students.

Based on the results of the winstep program on the Person Item Map, there are two women from rural areas, one woman from the city and one man from the city occupying the highest place in terms of creative thinking abilities. At the lowest place there were women from the village. In this research, the level of thinking ability is seen from the indicators of creative thinking.

**a. The results suggest different tendencies in creative thinking indicators between male and female students**

The results of the study showed that at a very high level of creative thinking ability, women tend to excel in three indicators, namely fluency, originality, and elaboration. In contrast, men only showed superiority in the flexibility indicator. A similar phenomenon also occurred at a very low level of creative thinking ability, where women continued to dominate the fluency, originality, and elaboration indicators, while men only excelled in the originality indicator. However, these results still show differences in creative thinking between men and women. This is in line with the results of research by Ülger & Morsünbül, (2016), which found significant differences in creative thinking ability in favor of women, where women tend to have higher creative thinking scores than men.

Several recent studies support these findings. According to research conducted by (Klainin-Yobas et al., 2016), women show advantages in several aspects of creative thinking, especially in social and emotional contexts. In addition, research by Runco & Jaeger, (2012) also found that women excel in divergent thinking, an important component of creativity that involves the ability to generate many ideas or solutions. Another study by (Glăveanu & Tanggaard, 2014; Harris, 2003) showed that gender differences in creativity can be influenced by socio-cultural factors, which generally give women more space to explore creativity in a supportive environment.

Several studies have shown that gender differences in creativity are inconsistent, with some studies reporting little or no significant gender differences in both creativity test scores and creative skills in general (Baer & Kaufman, 2008) . However, the results of this study revealed that at very high levels of creative thinking ability, females excelled in three key indicators, namely fluency, originality, and elaboration. These findings are in line with research by Hong et al., (2013) , who found that female students produced more responses (fluency), more idea categories (flexibility), and more detailed answers (elaboration) compared to male students.

Furthermore, some studies have shown that women tend to be better at certain aspects of creativity, while men show advantages in others. According to (Pérez-Fabello & Campos, 2011), higher verbal

abilities in women may provide advantages in generating a variety of ideas and adapting to different situations.

On the originality indicator, men often show higher levels of originality in their ideas, which is likely related to their tendency to take greater risks and explore less conventional ideas. Research conducted by (Abraham et al., 2014) supports this view, where men are more likely to produce unique and unusual ideas, an aspect associated with radical and explorative creativity

Meanwhile, in the elaboration indicator, although there is no clear consensus in the literature, several studies show that women tend to be better at detailing and developing ideas. For example, the results of a study by (Runco & Jaeger, 2012) showed that women have a higher ability to develop ideas to be more complete and mature, which may reflect their attention to detail and structure in the creative thinking process

Environmental and social factors play an important role in shaping gender differences in creative thinking. Gender stereotypes, social roles, and cultural expectations may influence how male and female students develop and express their creativity. For example, in many cultures, females may be encouraged to engage more in activities that support verbal and emotional thinking, which in turn may influence certain aspects of creativity such as fluency and elaboration. In contrast, males may be more encouraged to explore risky and unconventional thinking, which may influence their levels of originality.

A concrete example in the research location, culturally women have a higher sense of shame than men, then women are placed as household managers, such as cooking, raising children and managing the family's economic situation, so that verbal and emotional thinking is important to help the role in terms of local culture. This is what makes men have more creative and non-conventional thinking, because they feel socially supported to think more creatively without fear of risk

The results of the analysis by Yousaf & Ghayas, (2015) revealed that girls have much higher creativity than boys. This can be explained by differences in how the two genders respond to social support. Research by Simonton, (2018) shows that girls tend to be more sensitive to social support and use it as a source of motivation to increase their creativity

The results of a study by Da Costa et al., (2015) found that gender differences in creativity can be moderated by factors such as self-confidence and intrinsic motivation. Women who feel supported by their environment tend to show higher creative performance compared to men, who may be less influenced by social support but more by other external factors, such as challenges or competition

**b. The results of the study indicate different tendencies in creative thinking indicators among students based on their domicile**

The results of the study showed that at a very high level of creative thinking ability, students from urban areas excelled in the indicators of fluency and originality, while students from rural areas excelled in the indicators of flexibility and elaboration. These results show that students from urban and rural areas have creative thinking abilities that have different tendencies

According to Zhao, (2021) , rural adolescents have lower performance than urban adolescents in creative thinking; however, migrant adolescents have comparable creative thinking abilities to urban adolescents. Urban adolescents tend to enjoy higher levels of paternal autonomy support, equality in the classroom environment, intelligence, knowledge, creative personality, and extrinsic motivation compared to rural adolescents.

Furthermore, research shows that environmental factors, intelligence, and open personality significantly affect students' creative thinking ability and creativity (Simonton, 2000). Environmental factors, including intellectual stimulation and access to creative resources, tend to be more abundant in urban areas compared to rural areas, which may explain the systematic differences in creative potential between students living in urban and rural areas. Li & Ranieri, (2013) emphasized that the gap between rural and urban areas in terms of environmental stimulation and resources plays an important role in shaping students' creative thinking ability.

Recent research also supports this view. According to Opoku-Asare & Siaw, (2015), differences in access to quality education, technology, and social support between urban and rural students contribute to differences in creative thinking performance. Students in urban areas are more likely to be exposed to a variety of creative stimuli that support the development of fluency and originality, while students in rural areas tend to develop flexibility and elaboration as adaptive responses to more limited environments

**c. What is the description of the differences in students' creative thinking based on gender and domicile differences?**

Based on the results of the Person Item Map, individually the students with the highest creative thinking results were two female students from the village, one female student from the city, and one male student from the village. This difference in creative thinking ability can be explained by access to educational facilities and resources. Students who come from cities generally have better access to learning facilities that support the development of creativity compared to students who live in rural areas. This is in line with (Kumar, (2014) ; Kumar & Kumari, (2016) research which found that urban student groups were significantly superior in creative thinking abilities compared to rural student groups.

In addition, Davies et al., (2013) stated that learning environments that support creativity have a significant positive impact on students' academic achievement, self-confidence, resilience, motivation, engagement, and the development of social, emotional, and critical thinking skills. With this understanding, educators and policy makers need to design more effective and inclusive educational interventions to support the creative development of all students, regardless of their gender or place of residence

These interventions can include providing equal educational resources between urban and rural areas, as well as developing programs that encourage students' active participation in creative activities. (Collard & Looney, 2014) assert that understanding how gender and domicile affect students' creative thinking is essential to designing educational approaches that can maximize the creative potential of each individual.

## 4. Conclusion

Based on this study, there are clear differences in students' creative thinking abilities when viewed from gender and domicile. Female students tend to demonstrate higher creative thinking performance than male students, particularly in the indicators of fluency, originality, and elaboration, while male students show relative superiority only in flexibility. In terms of domicile, students from urban areas achieve higher scores at very high levels of creative thinking on certain indicators, although they are also more likely to experience very low performance across all indicators compared to students from rural areas, indicating greater variability. Furthermore, the interaction between gender and domicile reveals that female students from rural areas excel particularly in elaboration, whereas female students from urban areas show strengths in fluency and originality, while male students from urban settings tend to perform better in flexibility.

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