# The Analysis of the Mathematical Creative Thinking Process in Terms of Gender Based on Wallas' Theory

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**Abstract.** The purpose of this study is to find out the process of creative mathematical thinking skills in terms of gender based on Wallas's Theory which has four steps such as preparation, incubation, illumination and verification. This study employed a qualitative descriptive approach. This study involved 6 students with 3 male students and 3 female students which have highest scores of creative thinking skill tests at SMA Negeri 3 Kuningan, the subject was chosen with purposive sampling technique. The instrument of this study was observation, interview, and documentation of test reports. The data analysis technique used was analyzing the instrumens to draw conclusion. The data verification tested with time and technique triangulation. The study reveals that (1) The process of creative mathematical thinking skill of male students requires shorter time on preparation, tend to remain for a second on incubation for understanding and exploring the problem, figure out the ideas for solving the problem on illumination. However, the male student's writings and explainations are undirected and unsystematic. On verification, the male students can be able to solve the problem with another way. However, when the harder questions are given to them, it took long enough time to finish. (2) The process of creative mathematical thinking skill of female students on preparation requires longer time to understanding the problem, however the female students can understand the problem effectively. On incubation, the female students also tend to remain for understanding and exploring the problem. However, the female students can explain and figure out the ideas to solve the problem systematically and understandably. On verification, the female students can also be able to solve the problem with another way. However, they can not figure out another way if the question is more difficult.

**Keywords:** Creative; Mathematical thinking skills; Gender; Wallas's Theory

## 1 Introduction

Mathematics as a basic science plays an important role in the development of science and technology. Mathematics is one of the subjects taught at every type and level of education, both general education and vocational education, ranging from basic education to tertiary education. The purpose of studying mathematics is that students are expected to be able to think logically, analytically, critically and creatively and are expected to be able to solve all the problems they face, both problems related to mathematics lessons, and those related to everyday life. Creative

UNISET 2021, December 02, Kuningan, Indonesia

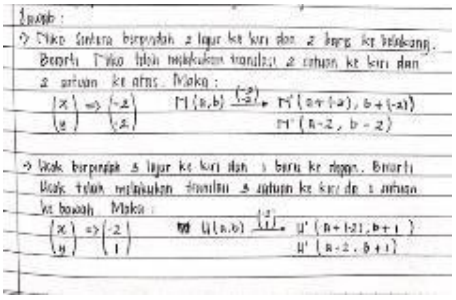
DOI 10.4108/eai.2-12-2021.2320280

thinking is one of the abilities that must be developed through education in schools, one of which is in learning mathematics. This is in accordance with the objectives of learning mathematics, so that students have the ability to think logically, analytically, systematically, critically, and creatively, as well as the ability to work together.(Kemendikbud, 2006).Creative thinking is defined by Bart et al. (2015) as the ability to understand problems, make assumptions, generate new ideas, and communicate results. Kargar et al. (2013) thinking processes involve the ability to generate original ideas, to understand new and unexpected relationships, or to construct unique and improved orders between seemingly unrelated factors. Based on the opinion above, it can be concluded that creative thinking is an ability to understand new problems that have never been passed and deal with them with new ideas as well.

Anwar (2016) suggests that one of the factors that influence creative thinking is gender. In line with that Widyastuti et al. (2018) suggests that gender factors affect students' mathematical creative thinking skills. Based on research from Subarinah (2013), "Gender is what distinguishes one individual from another". Gender is influenced by social and cultural factors from birth. Several studies show that the learning outcomes of male students are better than female students. This is in line with Wulandari (2011), who said that "weak women's ability to work on abstract problems, so they are considered weak and less able to learn mathematics".

A study conducted by Effendi et al (2017) about the creative thinking ability of junior high school students in solving statistical problems is still in the low category. Therefore, based on the results of observations and several other researchers, it can be concluded that students' creative thinking skills are low. Based on the results of observations made at SMAN 2

Kuningan in class XI MIPA 1 by giving questions on the material of transformation geometry with indicators of creative thinking fluancy and flexibility there are differences between the thinking processes of men and women, although in terms of the results are the same but in the way they answer different. One of the answers from two students is shown in the following picture.



**Picture 1.** Results of the preliminary study of female student

Based on image 1 the answers of female students above are in the process of answering students' questions in the preparation, incubation, illumination and verification stages. The steps in the process of female students understanding the questions, making statements to make it easier to answer the questions given, linking the understanding of the previously known material and getting solutions to answer the questions.

**Picture 2.** Results of the preliminary study of male student

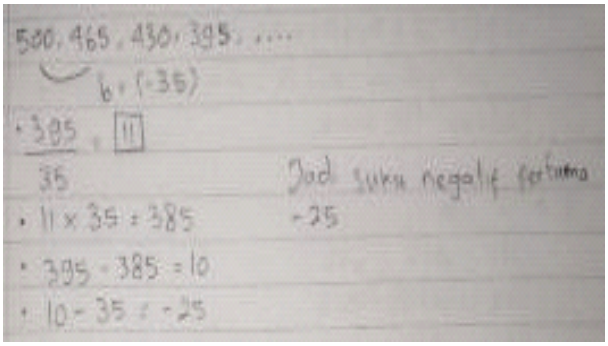
The male students' answers above are in the process of answering student questions in the preparation, incubation, illumination and verification stages. The process steps for male students to understand the problem by mentioning what is known, asked, find a solution and apply the solution correctly and apply other ways of solving the problem. Based on this background, researchers want to conduct research to determine the creative thinking process in terms of gender based on Wallas theory, it is necessary to conduct a study entitled "Analysis of Mathematical Creative Thinking Processes in terms of Gender Based on Wallas Theory".

## 2 Research Method

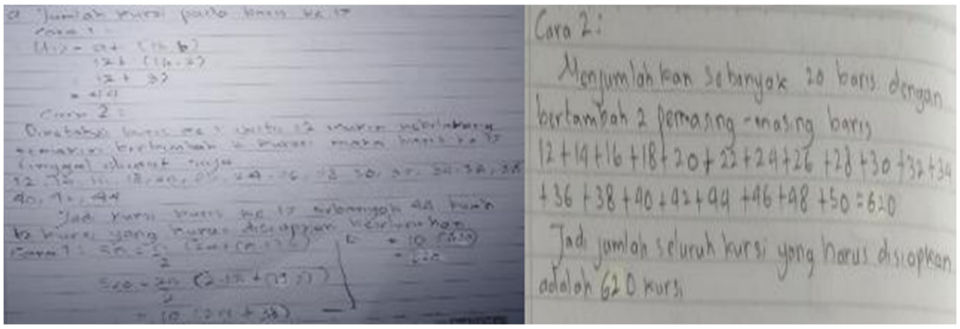
This study uses a qualitative research method with a descriptive approach. Sampling in this study was done by grouping according to gender. The subject of this research is aimed at the students of class XI MIPA 6 SMA Negeri 3 Kuningan which the number of students is 37 consisting of 29 female students and 8 male students. Subject selection by purpusive sampling where the procedure for selecting subjects in this study by giving tests to all students of class XI MIPA 6 SMA. After obtaining valid question data, a test was conducted on 6 selected subjects, namely 3 men and 3 women who got the highest score on the test results of creative thinking indicator questions. The subjects in this study were class XI MIPA 6. The selection of subjects in this study took into account several criteria. Data collection techniques in this study include observation, creative thinking tests, interviews and documentation.

## 3 Research Result

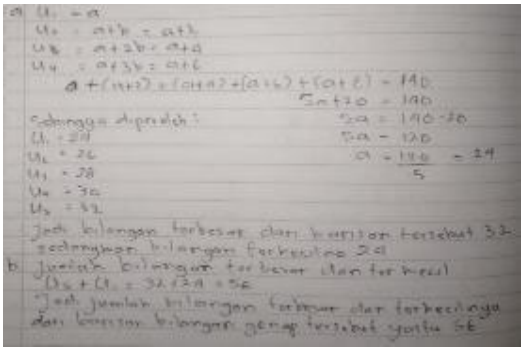
### *3.1. Test Result Subject BN (male)*




**Picture 3.** BN a nswer Phase I




**Pictu re 4.** BN answer Phase II




**Picture 5.** BN answer Phase III

The creative thinking process of the BN subject (male) at the time of preparation, the subject can understand the problem by taking quite a while to understand the question, although sometimes the subject does not write down every step in a structured and systematic way, but the subject has a plan before taking action. This shows that the subject can look at the problem, identify the problem and formulate the problem well. This is in accordance with the opinion (Nurrahmah, 2015) that students with high abilities tend to be able to understand questions well in a short time. This is also in line with the opinion (Sari et al., 2017) which suggests that male students at the preparation stage of students identify the problems asked well, students choose the information needed and information that is not needed in solving problems correctly.

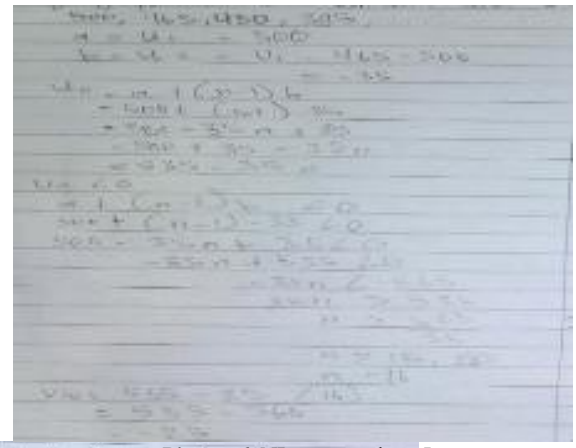
In the incubation stage, the subject stops for a moment, he tends to see, read and understand the questions, to remember the practice questions and formulas that he had previously received by moving his feet because doing so helps the brain's performance to think more easily, puts forward logic to solve problems. solve the problem. The silent expression of understanding the problem is the first step where the subject allows the mind to rest and moves the limbs intentionally or reflex movements are things that are done to try to come up with ideas. This is in accordance with the opinion (Amalia et al., 2015) which suggests that students at the incubation stage are the stage when students have the potential to come up with many ideas. (Sari et al., 2017) also suggested that students at the incubation stage are the stage when students develop a relationship between ideas and solutions from the ideas they have previously received.

In the illumination stage, the subject can find a solution to the problem and explain each step even though and in explaining the subject is good in delivering because he has good communication. This is in line with Saefudin (2012) who concluded that when applying ideas, students with high mathematical abilities did not make mistakes in solving problems, and felt challenged to solve problems in various ways and answers. (Arifin & Bharata, 2017) Also suggested that male students are very able to convey ideas and are able to communicate well what they have been doing.

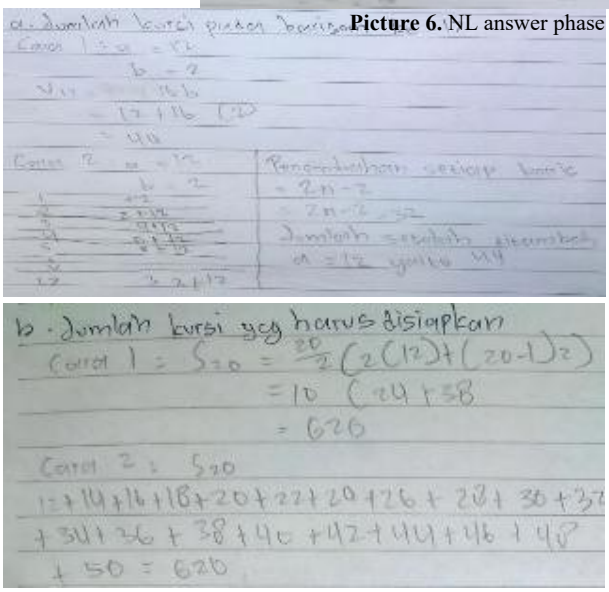
The subject verification stage is able to apply other methods that are different from the way used by the teacher. This is in line with Saefudin (2012) that students who have high mathematical abilities are more creative, innovative, full of inspiration and unique ideas, but the subject does not re-examine the results of his answers, meaning that the subject is very confident in his work but lacks confidence in the results. this is in line (Asalah et al., 2018) by suggesting that male students who have high abilities are flexible in their lives, meaning that these students are not doing things sequentially, but they are good when given a teacher's question which he suddenly immediately works on.

Based on the explanation above, it can be concluded that there is a match between stage I and stage II and stage III. At the preparatory stage, the tendency of male students to quickly understand problems because male mathematical abilities are greater so that they quickly understand mathematical problems, students are also able to understand information related to explaining what is known and asked, but students sometimes write down what is asked on the answer sheet. Students can make plans first before solving a problem. At the incubation stage, students tend to stop in the process of working on them to explore questions and come up with ideas to solve related problems. At the Illumination stage students can find ideas correctly and correctly. At the verification stage students can apply other methods and the results are correct, but in doing so they do not have time to re-check the results of their answers.

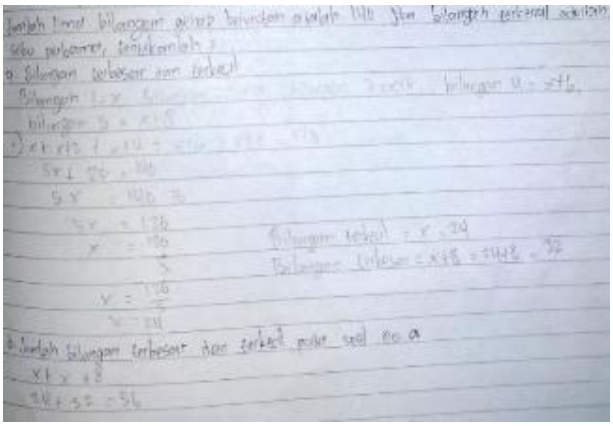
### *3.2. Test Result Subject NL (male)*



**Picture 6.** NL answer phase I



**Picture 7.** NL answer phase II



**Picture 8.** NL answer phase III

The creative thinking process of the NL subject (male) at the preparation stage can understand the problem by requiring quite a bit of time to understand the question, although sometimes the subject does not write down every step in a structured and systematic way, but the subject and has a plan before taking action. This shows that the subject can look at the problem, identify the problem and formulate the problem well. This is in accordance with the opinion (Nurrahmah, 2015) that students with high abilities tend to be able to understand questions well in a short time. This is also in line with the opinion (Sari et al., 2017) which suggests that male students at the preparation stage of students identify the problems asked well, students choose the information needed and information that is not needed in solving problems correctly.

In the incubation stage, the subject stops, he tends to see, read, understand the problem, and write down the formulas in advance so that when the working process does not forget the formulas and know the direction of solving the problem. Silent expressions, writing down formulas that the subject knows, understanding the matter of playing a pen and limbs tend to have a lot of movement, to remember the practice questions and formulas that he has received before are the first steps where the subject allows the mind to rest and try to come up with ideas. This is in accordance with the opinion (Amalia et al., 2015) which suggests that students at the incubation stage are the stage when students have the potential to come up with many ideas. However, in stage III (question 3) the subject did not stop for a moment, he tended to see, read and understand the problem, and immediately worked on the problem because the teacher had ordered him to come forward so that the learning was meaningful and easy. In line with that (Asalah et al., 2018) suggests that students with high mathematical abilities like to plan their work and work on plans that have been made previously.

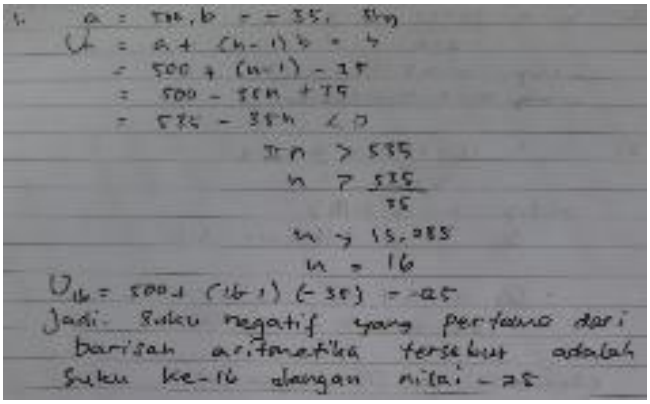
In the illumination stage, the subject is able to find a solution to the problem and explain each step, although at the time of explaining the subject still stammers due to his low communication skills. This is in line with Saefudin (2012) who concluded that when applying ideas, students with high mathematical abilities did not make mistakes in solving problems, and felt challenged to solve problems in various ways and answers. Nugraha & Pujiastuti, (2019) also concluded that the overall mathematical communication ability of female students was higher than male students.

The verification stage of the subject is able to apply other methods but when given a question that is a little difficult and according to him it is strange to what he has found before,

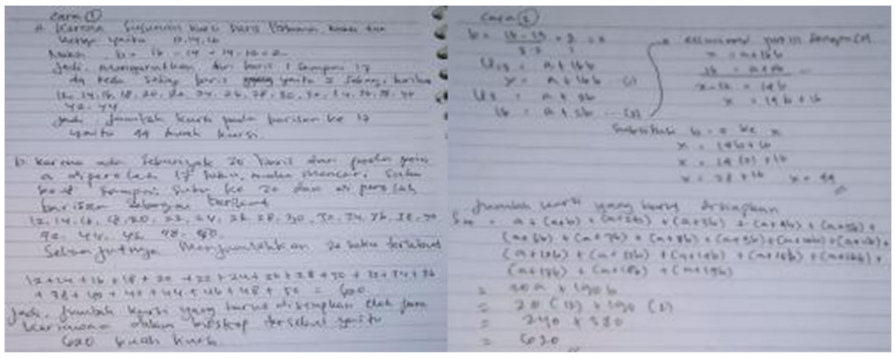
the subject cannot apply other methods, meaning that the subject is lacking in developing his ideas, the subject re-examines the results of his answer, meaning that this subject is detailed in solving the problem. but less confident with the results of the answers at stage 1 (question 1). This is in line with suggesting (Arifin & Bharata, 2017) that male students finished working on the questions, male students checked and recalculated what they had done whether it was right or wrong, so that students were fairly thorough in working on the questions. , male students tend to be less in developing their ideas.

Based on the explanation above, it can be concluded that there is a match between stage I and stage II and stage III. At the preparation stage students are quite fast in understanding the related questions, students are also able to understand and write down related information in a structured manner and tend to make plans first before solving a problem. However, in stage II (question 2), the subject is less fast in understanding the questions, he tends to understand more about the types of questions that use examples compared to story questions. At the incubation stage, students tend to stop for a moment to explore the problem by writing down formulas so that the process does not forget the formula and focus on the subject and try to solve the problems given. At the Illumination stage students are able to find solutions to problems but in explaining students are less clear because their language communication skills are lacking or students tend to be rigid. At the verification stage students are able to apply other methods, but when given questions that are a little difficult, students cannot apply other methods, meaning that students are lacking in developing their ideas, students re-examine the results of their answers, meaning that these students are detailed in solving problems and tend to feel confident with the results of their answers.

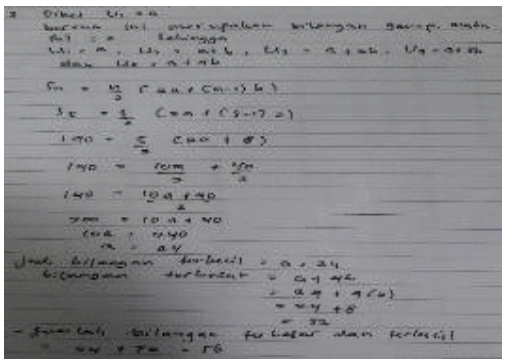
### *3.3. Test Result Subject IN (male)*




**Picture 9.** IN answer phase I



Picture 10. IN answer phase II



**Picture 11.** IN answer phase III

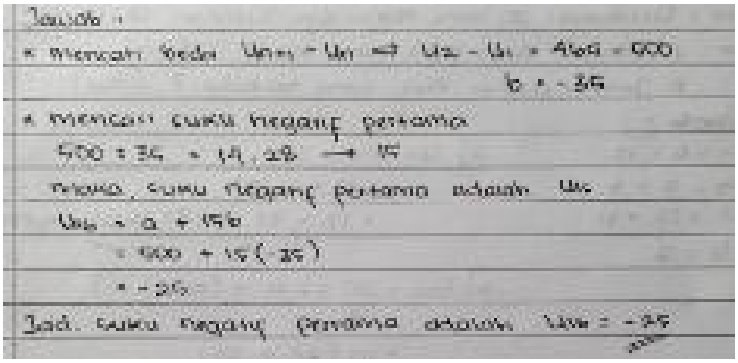
The creative thinking process of the subject IN (male) at the preparation stage, the subject in understanding the problem tends to be quite long, but can look at the problem by re-explaining the problem given by using his own language, can mention what elements are known, understand what is being asked and have a plan before acting, this shows that the subject can examine the problem, identify the problem and formulate the problem well even though it requires extra understanding. This is also in line with the opinion of Wulantina, Kusmayadi, and Riyadi (2015) who concluded that students with high abilities at the student preparation stage identify the problems asked properly, students choose the information needed and information that is not needed in solving problems correctly.

In the incubation stage, the IN subject paused for a moment playing the question paper, placing his thumb on his chin. In addition, when working on questions, they tend to be more relaxed by listening to music to understand the questions and remember the formula for the questions. Silent expression, playing with paper and placing the thumb on the chin is the first step where the subject allows the mind to rest and try to come up with ideas. This is in accordance with the opinion (Amalia et al., 2015) which suggests that students at the incubation stage are the stage when students have the potential to come up with many ideas. In line with that (Sari et al., 2017) also suggests that students are in the incubation stage. This is the stage when students develop a relationship between ideas and solutions from the ideas that they have gotten before.

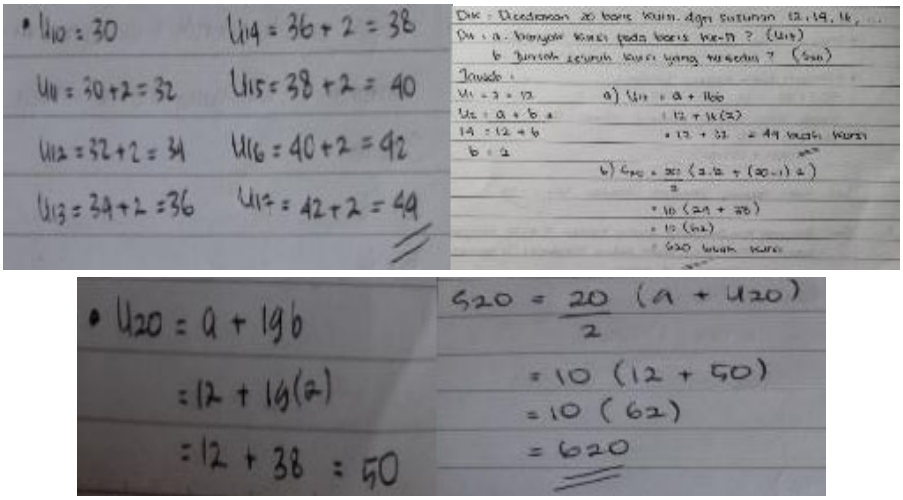
In the illumination stage, the subject is able to find a solution to the problem and explain each step, although at the time of explaining the subject still stammers due to his low communication skills. This is in line with Saefudin (2012) who concluded that when applying ideas, students with high mathematical abilities did not make mistakes in solving problems, and felt challenged to solve problems in various ways and answers. Nugraha & Pujiastuti (2019) also concluded that the overall mathematical communication ability of female students was higher than that of male students.

In the verification stage, the subject is able to apply other methods, but when he is given a question that is a little difficult and he thinks it is strange from what he has found before, the subject cannot apply another method, meaning that the subject is lacking in developing his ideas, but the subject does not re-examine the results of his answer, meaning that the subject is very confident. This is in line (Asalah et al., 2018) by suggesting that male students who have high abilities are flexible in their lives, meaning that these students in doing things are not sequential, but good. when given a teacher's question suddenly he immediately worked on it. Based on the explanation above, it can be concluded that there is a match between stage I and stage II and stage III. At the stage of preparation for old students in understanding related questions, students are also able to understand and write down related information in a structured manner and tend to make plans first before solving a problem. At the incubation stage students tend to buy time because the subject had stopped to refresh their brains by taking a long time after which students tried to solve the related problems. At the illumination stage students are able to find solutions to the problem with students being able to build problem solutions by explaining and finding solutions to related problems appropriately. At the verification stage students can apply other methods, but the subject does not re-examine the results of his answers, but is less confident with the results of his answers.

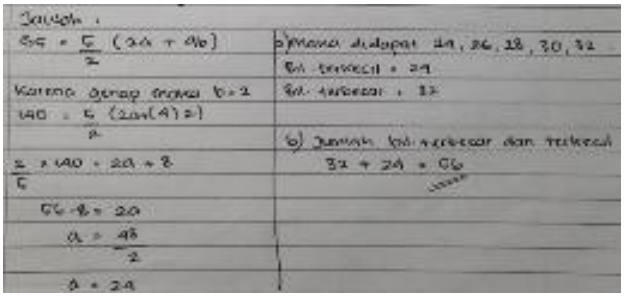
### *3.4. Test Result Subject SL (female)*



**Picture 12.** SL answer phase I



Picture 13. SL answer phase II



**Picture 14.** SL answer phase III

It can be concluded that the creative thinking process of the subject who has the initials SL (female) in the preparation stage, the subject can understand the problem by taking quite a while to understand the problem, although sometimes the subject does not write down every step in a structured and systematic way, but the subject and has a plan beforehand before acting. This shows that the subject can look at the problem, identify the problem and formulate the problem well. This is in accordance with the opinion (Nurrahmah, 2015) that students with high abilities tend to be able to understand questions well in a short time. This is also in line with the opinion of Wulantina, Kusmayadi, and Riyadi (2015) who concluded that students with high abilities at the student preparation stage identify the problems asked properly, students choose the information needed and information that is not needed in solving problems correctly.

In the incubation stage, the SL subject did not have time to stop for stage I (question 1), the subject tended to immediately work on and explore it. Although in the thought process the subject usually plays with a pen/pencil or doodles in a book to make sure the steps in answering the question are correct, this is in line with that (Asalah et al., 2018) suggesting that students with high math skills like to plan. their work and work on pre-made plans. However, at stage

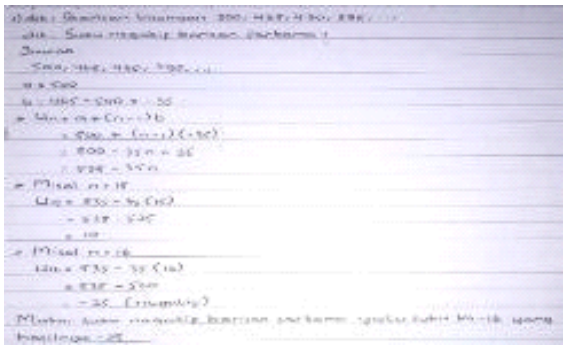
II (question 2) and stage III (question 3) the subject paused, the subject tended to be in the process of thinking usually by playing with pens/pencils or doodles in books, twirling pens or playing writing instruments, playing with fingers, tapping the pen to the forehead and trying to choose the right formula/method to be used in solving the problem. Silent expressions, playing with a pen/pencil and tapping the pen to the forehead are the first steps where the subject allows the mind to rest and try to come up with ideas. This is in accordance with the opinion (Amalia et al., 2015) which suggests that students at the incubation stage are the stage when students have the potential to come up with many ideas.

In the illumination stage, the subject of SL can find a solution to the problem and explain each step although and in explaining the subject is good in delivering because he has good communication. This is in line with Saefudin (2012) who concluded that when applying ideas, students with high mathematical abilities did not make mistakes in solving problems, and felt challenged to solve problems in various ways and answers. (Arifin & Bharata, 2017) Also stated that female students are very able to convey ideas and are able to communicate well what they have been doing. Both in the form of female students' writings that are fairly clear and the delivery of the subject when interviewed.

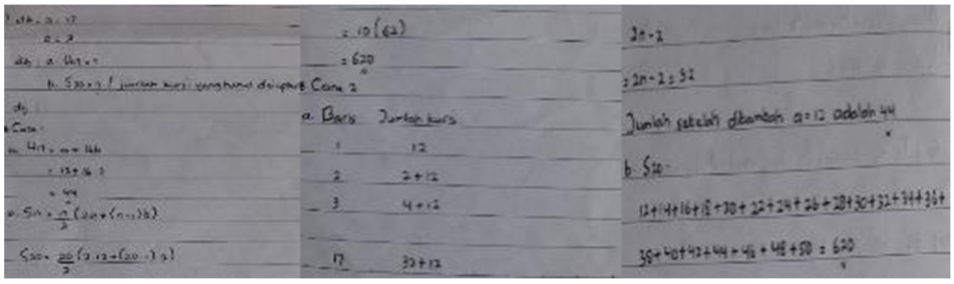
The subject verification stage is able to apply other methods that are different from the way used by the teacher. This is in line with Saefudin (2012) that students who have high math skills are more creative, innovative, full of inspiration and unique ideas. the subject re-examines the results of the answer, meaning that this subject is detailed in solving the problem but lacks confidence in the results of the answer. This is in line with the opinion (Arifin & Bharata, 2017) which suggests that female students check and recalculate what the female students have done whether it is right or wrong, so that the subject is fairly thorough in working on the questions.

Based on the explanation above, it can be concluded that the subject of SL, namely female students, has a match between stage I and stage II and stage III. At the preparatory stage, the subject tends to be quite quick to understand the problem because the subject has high mathematical ability so that he/she quickly understands mathematical problems, students are also able to understand information related to explaining what is known and asked, write down related information in a structured manner and tend to make plans before completing a problem. At the incubation stage, female subjects tend not to stop for a moment, she immediately works on the problem. At the illumination stage students are able to find solutions and explain related problems in a clear and structured manner. At the verification stage, students are able to apply other methods, the subject re-examines the results of his answers, meaning that the subject is detailed in solving a problem and the subject is less confident with the results of the answer.

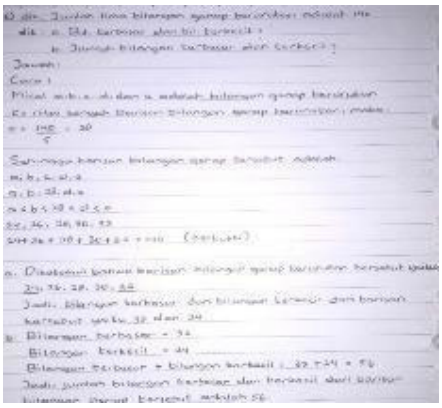
### *3.5. Test Result Subject FA (female)*



**Picture 15 . FA answer phase I**



**Picture 16.** FA answer phase II



**Picture 17.** FA answer phase III

1) The creative thinking process of the subject who has the initials FA (female) at the preparation stage, the subject in understanding the problem tends to be quite long, but in stage II (question

2) the subject only reads 1 time to understand the question, can look at the problem by explaining back from the problem given using their own language, can state what elements are known and asked and have a plan before acting, and admit to having received this type of question while still in junior high school, this shows that the subject can look at problems, identify problems and formulate problems well. This is also in line with the opinion of Wulantina, Kusmayadi, and Riyadi (2015) who concluded that students with high abilities at the student preparation stage identify the problems asked properly, students choose the information needed and information that is not needed in solving problems correctly. In the incubation stage, the subject stopped for stage I (question 1) and stage III (question

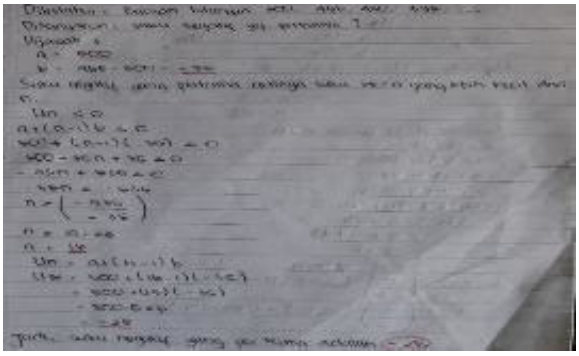
3) the subject tended to stop for a moment silently looking at the question, put his hand on his chin and made scribbles in the book to remember the practice questions he had. Silent expression, putting a hand on the chin and making scribbles in a book are the first steps where the subject allows the mind to rest and try to come up with ideas. This is in accordance with the opinion (Amalia et al., 2015) which suggests that students at the incubation stage are the stage when students have the potential to come up with many ideas. However, the subject at stage II (question 2) did not have time to stop, the subject immediately worked on it and studied it, this is in line with that (Asalah et al., 2018) suggesting that students with high mathematical abilities like to plan their work and work on the plans that have been made. previously.

In the illumination stage, the subject of SL can find a solution to the problem and explain each step although and in explaining the subject is good in delivering because he has good communication. This is in line with Saefudin (2012) who concluded that when applying ideas, students with high mathematical abilities did not make mistakes in solving problems, and felt challenged to solve problems in various ways and answers. (Arifin & Bharata, 2017) Also stated that female students are very able to convey ideas and are able to communicate well what they have been doing. Both in the form of female students' writings that are fairly clear and the delivery of the subject when interviewed.

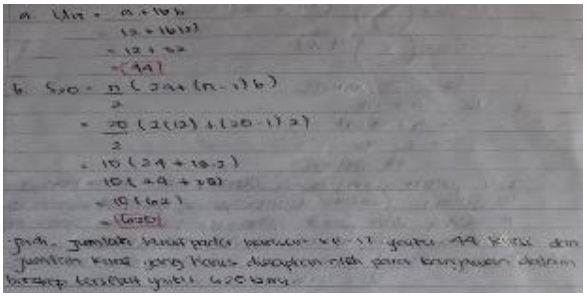
The subject verification stage is able to apply other methods that are different from the way used by the teacher. This is in line with Saefudin (2012) that students who have high math skills are more creative, innovative, full of inspiration and unique ideas. the subject re-examines the results of the answer, meaning that this subject is detailed in solving the problem but lacks confidence in the results of the answer. This is in line with the opinion (Arifin & Bharata, 2017) which suggests that female students check and recalculate what the female students have done whether it is right or wrong, so that the subject is fairly thorough in working on the questions.

Based on the explanation above, it can be concluded that the subject of FA, namely female students, has a match between stage I and stage II and stage III. At the preparatory stage, the female subject tends to be old in understanding problems, is able to understand and write down related information in a structured manner and tends to make plans first before solving a problem. At the incubation stage, female subjects tend to stop for a moment to refresh their brains. At the illumination stage, the subject is able to find solutions and explain related problems in a clear and structured manner. At the verification stage students are able to apply other methods but when given questions that are a little difficult students cannot apply other methods, meaning that students are lacking in developing their ideas, the subject re-examines the results of their answers, meaning that students are detailed in solving a problem and students are less confident with the results of their answers.

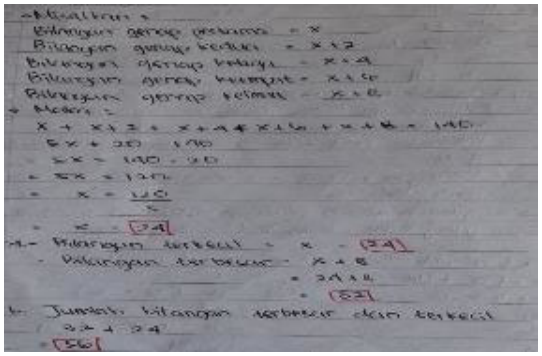
### *3.6. Test Result Subject SN (female)*



**Picture 18.** SN answer phase I



**Picture 19. SN answer phase II**



**Picture 20.** SN answer phase III

The creative thinking process of subjects who have the initials SN (female). In the preparatory stage, the subject in understanding the problem tends to be quite long, but can look at the problem by explaining again from the problem given by using his own language, being able to mention what elements are known, understand what is being asked and have a plan before acting, this shows that the subject can look at problems, identify problems and formulate problems well even though it requires extra understanding. This is also in line with the opinion of Wulantina, Kusmayadi, and Riyadi (2015) who concluded that students with high abilities at the student preparation stage identify the problems asked properly, students choose the information needed and information that is not needed in solving problems correctly.

In the incubation stage, the subject of SN paused to see and read the questions over and over again, playing with a pencil, moving his hands, holding his chin to remember the practice questions and formulas he had previously received. However, the subject works on and explores it, the subject tries hard to organize concepts or facts to find further ideas. Silent expressions, playing with a pencil and holding the chin are the first steps where the subject allows the mind to rest and try to come up with ideas. This is in accordance with the opinion (Amalia et al., 2015) which suggests that students at the incubation stage are the stage when students have the potential to come up with many ideas. In line with that (Sari et al., 2017) also suggests that students are in the incubation stage. This is the stage when students develop a relationship between ideas and solutions from the ideas that they have gotten before.

In the illumination stage, the subject of SN can find a solution to the problem and explain each step even though and in explaining the subject is good in the presenter because he has good communication. This is in line with Saefudin (2012) who concluded that when applying ideas, students with high mathematical abilities did not make mistakes in solving problems, and felt challenged to solve problems in various ways and answers. (Arifin & Bharata, 2017) Also stated that female students are very able to convey ideas and are able to communicate well what they have been doing. Both in the form of female students' writings that are fairly clear and the delivery of the subject when interviewed.

The verification stage of the subject is able to not apply other methods when given a question that is a little difficult and according to him it is strange from what he has ever found, meaning that the subject is less in developing his ideas, the subject re-examines the results of his answer, meaning that this subject is detailed in solving the problem but lacks confidence in the results. the answer. This is in line with the opinion (Arifin & Bharata, 2017) which suggests that female students check and recalculate what the female students have done whether it is right or wrong, so that the subject is fairly thorough in working on the questions.

Based on the explanation above, it can be concluded that the subject of SN, namely female students, is in conformity between stage I and stage II and stage III. At the stage of preparation for old students in understanding related questions, students are also able to understand and write down related information in a structured manner and tend to make plans first before solving a problem. At the incubation stage students tend to buy time because the subject had stopped to refresh their brains by taking a long time after which students tried to solve the related problems. At the illumination stage students are able to find solutions to the problem with students being able to build problem solutions by explaining and finding solutions to related problems appropriately. At the verification stage students cannot apply other methods, and students also re-examine the results of their answers, but are less confident with the results of their answers.

## 4 Discussion

There is a not too significant difference between the creative thinking process of male subjects and female subjects based on Wallas theory. These differences at the preparation stage of male students in understanding the questions require quite a bit of time, while female students in understanding the questions take a long time, this is in line with the opinion of Ellot, et al (Suendang, 2017) that the mathematical ability of male students male students are greater than female students. In line with this (Nurrahmah, 2015) that high-ability students tend to be able to understand questions well in a short time. So it can be said that male subjects tend to be faster in understanding math problems than female subjects. male subjects did not write down what was known and asked on the answer sheet, while women wrote down what was known and asked in the answers, this is in line with the opinion of Susanti & Maharani (2016), this is because female students are more thorough and diligent in writing while men are lazy so that in writing is not structured, this is also in line with the opinion of Gallagher et al. (Zhu, 2007) that women are more likely to adhere to procedures learned in class to solve problems, so they are less likely to use shortcuts and estimation techniques to solve unfamiliar and complex problems quickly.

At the incubation stage, the subject tends to stop for a moment to understand and explore questions such as playing a pen, writing down formulas related to the problem, playing a question paper, putting his thumb on his chin, scribbling in a book to remember the practice questions that have been obtained, playing with his fingers, tapping the pen to the forehead and reading the question over and over again to understand the problem. This is in line with (Amalia et al., 2015) which suggests that students at the incubation stage are the stage when students have the potential to come up with many ideas.

At the illumination stage, the male subject was able to find and explain the solution idea but it was not sequential and not in accordance with the procedure and in explaining was still confused, while the female student was the opposite. This is in line with Saefudin (2012) who concluded that when applying ideas, students with high mathematical abilities did not make mistakes in solving problems, and felt challenged to solve problems in various ways and answers. (Arifin & Bharata, 2017) Also stated that female students are very able to convey ideas and are able to communicate well what they have been doing.

At the verification stage, male students cannot re-examine the results of their answers, this is in line (Asalah et al., 2018) by suggesting that male students who have high abilities are flexibl in their lives, meaning that these students do not do something. sequentially, but it is good when the teacher is given a question which he suddenly immediately starts working on. while female students re-examine the results of their answers. This is in line with the opinion (Arifin & Bharata, 2017) which suggests that female students check and recalculate what the female students have done whether it is right or wrong, so that the subject is fairly thorough in working on the questions.

## 5 Conclusion and Suggestion

a. Creative Thinking Process of Male Subjects.

At the stage of preparation, the subject takes time to understand the problem because in reading, the subject immediately explores, writes down related information even though it does not write in a structured manner and tends to make plans before solving a problem. At the incubation stage, the subject tends to pause to understand and explore problems such as moving your feet, playing with a pen, writing down formulas related to the problem, playing question papers, putting your thumb on your chin and limbs tend to have a lot of movement to make them more relaxed in thinking. At the stage of illumination, the subject can find ideas for completion, but in writing it is not coherent and unsystematic and in explaining is still stammering. At the verification stage, the subject is able to apply other methods, but when given a question that is a little difficult, the subject takes a long time to apply another method, meaning that students are lacking in developing their ideas and the subject does not re-examine the results of the answer, because the subject feels confident in the process.

b. Creative Thinking Process of Female Subjects

At the preparation stage the subject takes a long time to understand the problem but the subject is able to understand the problem, write down related information in a structured manner and tends to make plans first before solving a problem. At the incubation stage, the subject tends to stop for a moment to understand the problem, such as playing a pen/pencil or scribbling in a book to remember the practice questions that have been obtained, playing with fingers, tapping the pen to the forehead, holding the chin and reading questions over and over to understand. the matter. At the Illumination stage, the subject can explain and find the solution idea coherently from beginning to end and explain the solution to the problem correctly. At the verification stage, students are able to apply other methods, but when given questions that are a little difficult, students cannot apply other methods, meaning that the subject is lacking in developing ideas, the subject can re-examine the results of his answers by re-examining the completion steps in a coherent manner from beginning to end or matching. solutions between one way and another. This means that this student is detailed in solving.

1. Differences in Creative Thinking Processes in terms of Gender Based on Wallas Theory.

   The difference in the creative thinking process of male subjects and female subjects based on Wallas' theory is not very significant. These differences include: (1) At the preparation stage, male and female subjects understand the questions quickly, while female subjects take a long time to understand questions, (2) At the incubation stage, male and female subjects pause for a moment. to leave themselves from the problem by resting and contemplating, (3) At the Illumination stage, male subjects can find and explain the idea of a solution coherently but in explaining are still confused, while female students are the opposite. (4) the verification stage of male and female subjects sometimes feel confident with the results of their answers.

There are several suggestions that can be submitted by researchers based on the results of research that has been done are as follows:

1. Teachers must know and be aware of the differences in the creative thinking process of each of their students, both male and female. One way is to provide questions that stimulate students to think creatively or choose the right learning model, for example the student centered learning model so that students are more active and creative.
2. For researchers who want to conduct similar research related to the creative thinking process, this research can be used as input for conducting similar studies with the same point of view or other reviewing points of view and it is hoped that they can develop research, namely researching more subjects so that the results of the research can be obtained. better and wider in scope.

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