

# Influence of Anxiety Mathematically, Mathematical Connection Capabilities, and Independence Learning Against Math Learning Outcomes for PSTEP Students at Open University

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## Abstract

Teacher is the starting point in the learning process in schools. Open University (UT) Indonesia as a higher education institution deeply understand the problems faced by primary teachers. One of the subjects in the curriculum of primary education that still become the biggest challenge for primary school teachers are Learning Mathematics Subjects and Mathematics Subjects, as well as subjects related to Mathematics. Based on the results pre-survey made numerous Learning Groups (Pokjar), indicating a link between anxiety, the mathematical connection capability, independent learning and learning outcomes in mathematics. This research was conducted using the Mixed Method, i.e., exploratory design. This study was previously set using qualitative procedures followed by the quantitative. Two instruments are arranged. i.e., questionnaire systematic list for in-depth interviews and instruments in the form of questionnaires for quantitative purposes. The variable in this study is the variable Anxiety ( $X_1$ ), variable Mathematical Ability Connection ( $X_2$ ), variable Independence Learning ( $X_3$ ), and the variable Results of Math ( $X_4$ ). The population in the study were all students of the Open University Primary School Teacher Education Program (PSTEP) in Lampung Province who took the Study of Mathematics and Mathematics Education. Samples of this study were drawn from Learning Group of Sidomulyo, in South Lampung, Learning Group of Pekalongan, in East Lampung, and Learning Group of Sribhawono, in East Lampung, with the number of students more than 202 people. There is a relationship or the influence of all observed variables, both variable anxiety, variable mathematical connection, variable learning independent capabilities and variable outcomes learning mathematics. This means in mathematics student learning outcomes at Open University Regional Office of Lampung is affected by anxiety, mathematical connection capability and independent learning.

**Keywords:** anxiety, mathematical connection, independent learning, learning outcomes

## 1. Introduction

The role of a teacher is crucial in the development progress of education in Indonesia. Teacher is the starting point or the cutting edge in the learning process at schools. In accordance with the Regulation Number 14 in 2005 on Teachers and Lecturers related to education personnel. The regulation implicitly and explicitly shows that an educator or teacher is required to have competence in the learning process at the classroom. Open University (UT) as a higher education institution deeply understand the problems faced by primary teachers. Therefore, Open University is held in every province in Indonesia. Primary School Teacher Education Program (PSTEP) organized by Open University Lampung is one example of the Open University to facilitate access to primary school teachers in the province of Lampung to meet the criteria and competence expected of teachers. With the long distance learning, Primary School Teacher Studies Program can be held in each city and district in Lampung province, so as to overcome the problems caused by the problem long distance.

Primary School Teacher Education Program under the auspices of Regional Office of Lampung has the same curriculum with courses-courses in other universities with similar competencies. One of the subjects in the curriculum of primary education is still the biggest challenge for primary school teachers are learning Mathematics Subjects and Subjects Mathematics, as well as courses related to Mathematics. The subject is still the subject had feared and dreaded by teachers of primary schools in each Open University in Indonesia especially Open University in Lampung. Learning process in mathematics, many students of Open University in Lampung are experiencing anxiety, in the learning process in the classroom. Fear experienced by the teachers or students of Open University in Lampung is quite reasonable, because in Mathematics Learning there are several cognitive abilities that must be mastered by the student. Traffic mathematical abilities, among others: the ability of critical thinking mathematically, mathematical connection capability, the ability to think creatively mathematical, spatial ability mathematical, and other mathematical abilities. Mathematical ability is very important to have is some mathematical connection capabilities.

Based on the results pre-survey made numerous Learning Groups, indicating a link between anxiety, mathematical connection capability, independent learning and learning outcomes in mathematics. The data pre-

survey from the Open University in 2015, about the learning of mathematics in some Learning Group in Lampung Province obtained the following data: the Learning Group of Natar in 2013 the level of anxiety of students is high, while the ability to connect mathematical, independent learning, and the learning outcomes of mathematics all low. In Learning Group of Sidomulyo in 2013, high-level anxiety students, independent learning medium, while the mathematical connection capability, and low mathematics learning outcomes. In Learning Group of Way Serdang in 2014 the level of anxiety high student, while the mathematical connection capability, independent learning, and mathematics learning outcomes are all low. In Learning Group of Al Hikmah in the years 2014 to 2015 obtained the same data on each year, student anxiety level is high, while the mathematical connection capability, independent learning, and mathematics learning outcomes are all low.

From these data shows that in the year 2013 to 2015, both in the first semester and even from some Learning Group has done pre-survey, anxiety or anxiety of students at Open University in Lampung seem high. This indicates that the learning of mathematics always makes students anxious and afraid when they learn in the classroom. High anxiety turns coupled with mathematical connection capability, independent learning and learning outcomes of the mathematics that the average low. This is consistent with some theories of learning that learners who experience high anxiety may be indicated negative impact on the abilities of other learning. It also expressed by Spielberger which shows that at the stage where the work of the school's most challenging for learners (not too hard or too easy), learners with anxiety levels low performing better than students with high levels of anxiety (Slameto 2010). Flanders also urged teachers to provide warmth and encouragement also a little criticism is needed for learners with high levels of anxiety so that they can perform as well as possible (Slameto 2010).

Based on some of the possibilities and the results pre-survey, it is necessary to do in-depth research related about the relationship or influence between anxiety, connection capabilities mathematically, independent learning and learning outcomes of the mathematics that involves students at Open University in Lampung Province, especially on subjects related to mathematics and learning mathematics.

## **2. Platform Theory and Readers' Review**

### *2.1 Anxiety*

Anxiety comes from English, which means anxiety. Spielberger anxiety differentiate into two parts (Slameto 2010), first anxiety as a trait (trait anxiety) is a tendency for a person to feel threatened by a number of conditions that are not harmful, both anxiety as a state (state anxiety) is a temporary emotional state or condition in a person characterized by feelings of tension and concern that lived consciously and are subjective and heightened activity of the autonomic nervous system. So anxiety is an unpleasant feeling or mood that are not pleasant, characterized by terms such as fears, concerns, and fears that are sometimes experienced in different levels. Math anxiety is a form of either a person's feelings of fear, tension or anxiety in the face of math problems or in carrying out the study of mathematics by various forms of symptoms caused. Learners who have excessive anxiety toward mathematics tend to think math is a lesson that is less fun.

### *2.2 Ability Mathematical Connections*

According to the National Council of Teachers of Mathematics (NCTM) studied five important standard in mathematics, namely the competence of problem solving, reasoning, connection, communication, and representation (Hanny 2011). Connections derived from the English language that connection which means the relationship. According Ruspiani, mathematical connection capability is the ability to associate mathematical concepts both between concepts in mathematics itself or associate with other fields of mathematical concepts (Tusaddiah 2012). Mathematical connection capability is the ability to declare and implement the relationships between objects and between mathematical concepts, applying mathematics in other fields, applying mathematics in everyday life (Wahyu 2013). Connections with other words can be interpreted as an association, in this case the mathematical connection can be interpreted as a link between mathematical concepts internally is related to mathematics itself or an external linkages, namely mathematics with other fields either other subject areas as well as with ordinary life day. Rahmi Zulmaulida study in 2012, entitled Influence Learning Process Approach Reflective Thinking Against Upgrades Mathematical Connections and Critical Thinking of Students. This study concluded that the ability to connect and critical thinking mathematically learners will be increased if the learning approach of reflective thinking processes when compared to using conventional learning models. The difference of Rahmi Zulmaulida research with this study is the cognitive abilities that are used. Research Rahmi Zulmaulida use two cognitive abilities, namely the ability to connect and critical thinking mathematically, whereas this study uses only one cognitive ability, i.e., mathematical connections.

### *2.3 Independence Learning*

The word independence comes from the root word "self" that gets the prefix "to" and the suffix "an" which then form a word or a noun circumstances. Independence derived from the basic self, discussion through

independence can not be separated from the discussion on self development itself, which is in the concept of Carl Rogers called the self because that is the essence of self-reliance (Ali 2009). In KBBI independence is a thing or a state can stand on its own without relying on others (Poerwadarminto 1991). According Tirtarahadja and Sulo independent learning is a learning activity that lasts more driven by their own volition, choice, and responsibility themselves as learners (Panjaitan 2013). Sugilar summarizes the opinion Guglielmino, West and Bentley stated that the characteristics of individuals who have the readiness to learn independently characterized by: (1) a love of learning, (2) confidence as learners, (3) openness to learning challenges, (4) an inquisitive nature, (5) self-understanding in terms of learning, and (6) accepts responsibility for their learning activities (Tahar 2006). So self-regulated learning is a mirror creative attitude, freedom of action and responsibility are characterized by their initiative and willingness to learn from new experiences. Learners are said to have been able to learn independently if it has been able to perform learning tasks without dependence on others. Basically self-reliance is the behavior of individuals capable of initiative, able to overcome obstacles or problems, have confidence and be able to do things on their own without the help of others.

### 2.4 Learning Outcomes

The learning result obtained after the end of the learning process, when a person learns, the students said to have learned if there is a change in the behavior of such learners. Learning itself is an obligation for every human being, and in a matter of education are required to learn, in accordance with Government Regulation Number 47 in 2008 stipulates "On Compulsory Government Regulation"(Guza 2008). While the success of the learning process is not measured by the extent to which the subject matter has been submitted by teachers but the extent to which learners have a long search and find the subject matter itself, this is the sense of learning that emphasizes the process (Sanjaya 2008). Learning outcomes is a product that should be improved, definitely linked to the action of other elements, namely the learning process, equipment and means of education, teachers, and learners themselves (Asrosi 2008). So, from some of the above definition of learning outcomes is the ability of the students after receiving their learning experience, and a change in the individual. Learning outcomes are influenced by the amount of work done by children, besides learning outcomes are also influenced by intelligence and child's early mastery of the material to be studied. Learning outcomes are also influenced by the opportunity given to the students, as well as the time needed to master the material and completing a test given by the teacher. Research Eti Nurhayati and Absor in 2009, entitled Effect of Anxiety Facing Against Exam Learning Outcomes of Students. This research resulted in the conclusion that the level of anxiety of students greatly affect learning outcomes. The differences of Eti Nurhayati and Absor research with this study is the cognitive abilities that are used. Eti Nurhayati and Absor research use learning outcomes, whereas in this study using mathematical connection capabilities.

### 3. Methodology and Research Hypothesis

This research was conducted using the Mixed Method, i.e., exploratory design. This study was previously set using qualitative procedures followed by the quantitative. Two instruments are arranged i.e., questionnaire systematic list for in-depth interviews and instruments in the form of questionnaires for quantitative purposes. The image below is the operational framework of research done where there are three variables that affect Learning Outcomes Variable ( $X_4$ ) which is variable Anxiety ( $X_1$ ), variable Capability Connections Mathematically ( $X_2$ ), and variable Independent Learning Variable ( $X_3$ ). Variable  $X_1$ ,  $X_2$ , and  $X_3$  are the dependent variable and variable  $X_4$  is a moderate variable.

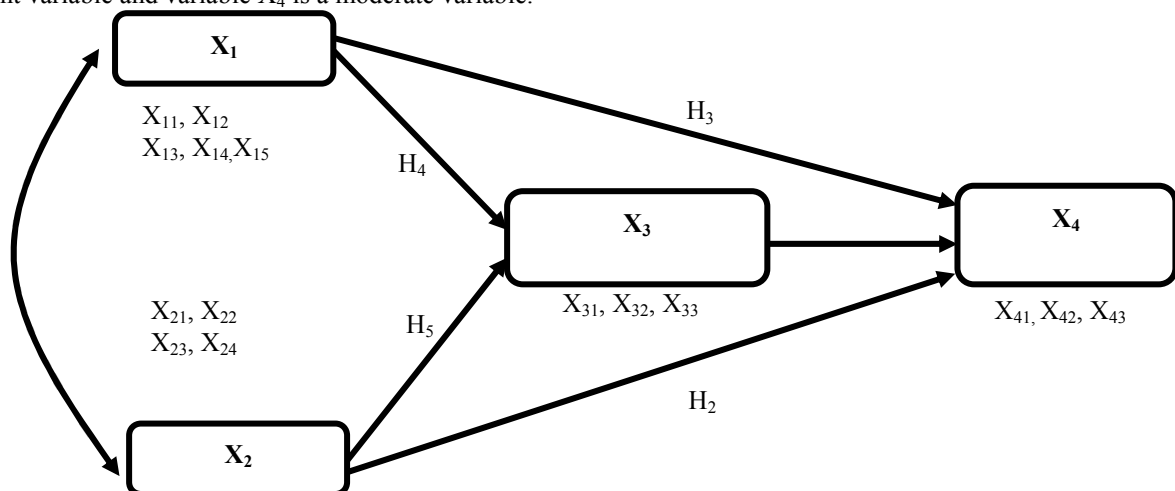


Figure 1. Framework Operational Research

The table below describes the dimensions of the components of each variable in this study.

Table 1. Variables and Dimension Research

No	Variable	Dimension
1	Anxiety ( $X_1$ )	$X_{11}$ = The cognitive aspect (Includes: difficulty concentrating, forgetfulness, difficult to understand, difficult to work)
		$X_{12}$ = Physiological aspects (Includes: trembling, nervousness, difficulty speaking, sensory disturbance, difficulty sleeping, stiffness, weakness)
		$X_{13}$ = Affective aspects (Includes: anger, fear, irritability, excited, worried, insecure, BAB/BAK)
		$X_{14}$ = Behavioral aspects (Includes: shy, tense, restless, rapid respiration, pale face, arms stiff, hesitant)
		$X_{15}$ = The social aspect (Includes: difficult to interact, socialize fear, fear of criticism, feelings of excessive).
2	Mathematical Connection Capability ( $X_2$ )	$X_{21}$ = Using mathematical connections associated with other areas of study.
		$X_{22}$ = Using mathematical connections associated with everyday life.
		$X_{23}$ = Using a mathematical connection between math topics with other mathematical topics.
		$X_{24}$ = Using a mathematical connection between math topics in mathematics itself.
3	Independent Learning Variable ( $X_3$ )	$X_{31}$ = Setting a goal of learning itself.
		$X_{32}$ = Monitoring progress and evaluating learning outcomes.
		$X_{33}$ = Choosing the appropriate learning strategies.
4	Learning Outcomes in Math ( $X_4$ )	$X_{41}$ = Understanding
		$X_{42}$ = Apprehending
		$X_{43}$ = Explaining.

This study consists of five hypotheses (H), includes: Hypothesis 1 (H1) that Mathematics Learning Outcomes influenced by Anxiety, Hypothesis 2 (H2) which Mathematics Learning Outcomes influenced by the ability Connections Mathematically, Hypothesis 3 (H3) namely Mathematics Learning Outcomes influenced by Independent Learning, hypothesis 4 (H4) which the Independent Learning influenced by Anxiety, hypothesis 5 (H5) which the Independent Learning ability influenced by Mathematical Connections.

The population in the study were all students who took the Course of Mathematics and Mathematics Education. Sampling technique is a method of data collection that are wholly or partly drawn to represent the population. The research is mixed method research and data collection is by way of a survey that is collecting data to all students. Samples of this study were drawn from South Lampung students PSTEP at Open University, and East Lampung students PSTEP at Open University, with the number of learners approximately 202 persons with distribution as follows: in Sidomulyo, South Lampung 142 students, in Pekalongan, East Lampung 29 students, in Sribhawono, East Lampung 31 students.

Table 2. Sample of students PSTEP at Open University who took the Course of Mathematics and Mathematics Education

No.	Learning Groups	Sample of Students
1	Sidomulyo, South Lampung	142
2	Pekalongan, East Lampung	29
3	Sribhawono, East Lampung	31
<b>Amount</b>		<b>202</b>

In this study, data collection is done through:

- Test

The test is used to determine the ability of mathematical connections on aspects of mathematics connection ability of students during the learning process. Thus, it can be seen learning achievement can be accomplished students. Tests such as a matter of description (essay). The test results used mathematical connection capability, together with the test results of the mathematical connection capability is based on formulated objectives as outlined in the tutorial grating tests. Before use, test item will be tested in advance to determine the internal consistency and reliability. Besides the preparation will follow the provisions in force, also pay attention to the suggestions put forward by a math tutor in

Learning Group sampled.

- **Questionnaire**  
Questionnaire is a technique of data collection is done by giving a set of questions or a written statement to the respondent to answer. The questionnaire method used to determine the level of anxiety and independent learning of students. To reveal the anxiety and Independent of student learning to use a Likert scale with four options.
- **Documentation**  
Mechanical engineering documentation, that the researchers used to obtain data about the state of student learning groups and others before being held tests associated with this research.

### 3.1 Research Instruments

The instrument used in this study is the instrument test (test the ability of mathematical connections) and questionnaires (questionnaire of anxiety). Good instrument must meet two important requirements, which are valid and reliable.

- **Mathematical Ability Test Connections**  
The research instrument to test the ability to connect mathematically is to use the test description of the types of problems based on the indicators of using connections mathematically linked to other subject areas, using connections mathematically linked to other subject areas, using connections mathematically between mathematical topics with other mathematical topics, using connections mathematically between mathematical topics in mathematics itself. The tests were conducted to determine the ability of mathematical connections of the students in math tutorial. The value of the mathematical connection capability learners obtained from the answers of students scoring on each item. Scoring ability is based on the mathematical connections Holistic Scoring Rubrics guide.
- **Anxiety questionnaire**  
Instruments for measuring anxiety (anxiety) students in this study was measured using a Likert scale. Students are asked to provide an answer by marking a "√" only one answer option that has been available. There are four possible answers that have been modified i.e., Strongly Agree (SS), Agree (S), Disagree (TS), and Strongly Disagree (STS). Four options have been selected to avoid hesitation selection of learners to a statement given. The statements given are closed, the opinion of learners consisting of statements positive and negative.
- **Learning self-reliance**  
Instruments to measure student learning Independent in this study was measured using a Likert scale. Students are asked to provide an answer by marking a "√" only one answer option that has been available. There are four possible answers that have been modified i.e., Strongly Agree (SS), Agree (S), Disagree (TS), and Strongly Disagree (STS). Four options have been selected to avoid hesitation selection of learners to a statement given. The statements given are closed, the opinion of learners consisting of statements positive and negative.
- **Test Results Learning**  
The research instrument for the achievement test is to use the test description of the types of problems based on the indicators of Understanding, Understanding and Explaining. The tests were conducted to determine the ability of student learning outcomes in mathematics tutorial. The value of the mathematical connection capability learners obtained from the answers of students scoring on each item. Scoring ability is based on the mathematical connections Holistic Scoring Rubrics guide.

## 4. Results and Discussions

In this section we will be discussing the test results relating to the validity of the questionnaire and tests that have been filled by the respondents. The draft instrument contains a number of statements and math are used to see the relationship between variables to student results. The design of the instrument developed in this study contains statements that are used to measure the variables that influence learning outcomes and the relationship between the variable itself. Variables examined included anxiety variable, mathematical connections variable, independent learning variable and Mathematics learning outcomes variable. To determine the strength of the correlation of each variables involved then performed using Structural Equation Models (SEM). Figure 2 in the following is the result of data processing of questionnaires and tests that have been filled by students.

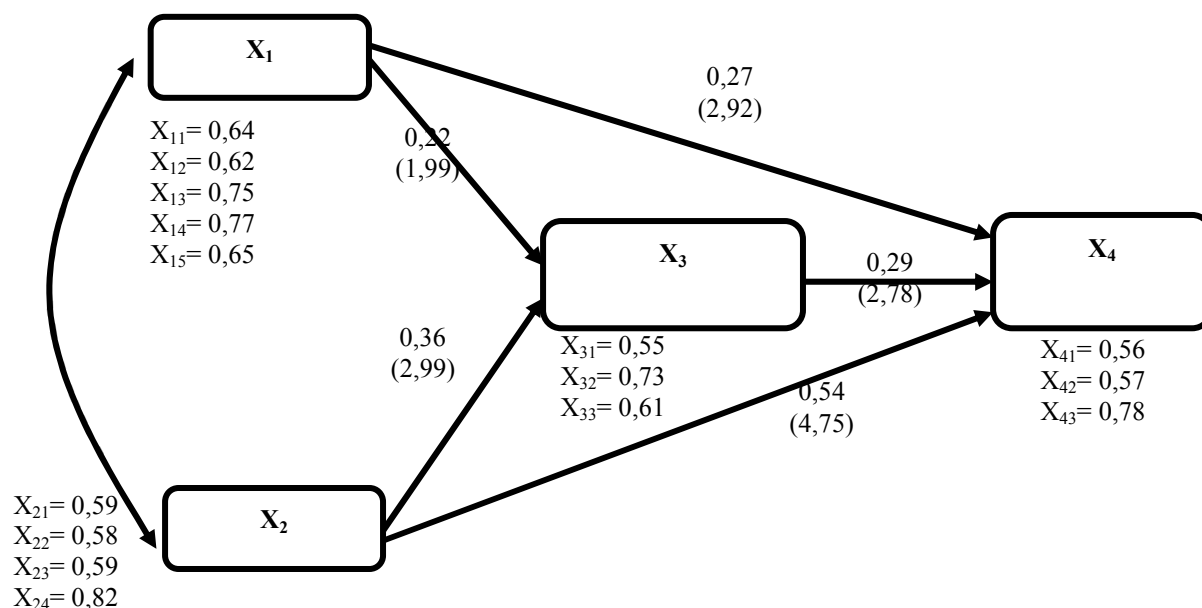


Figure 2. Results of Hypothesis and Loading Factors

Information:

- X<sub>1</sub> = Anxiety Variable (Anxiety)
- X<sub>11</sub> = The cognitive aspect (difficulty concentrating, forgetfulness, difficult to understand, difficult to work)
- X<sub>12</sub> = Physiological Aspects (trembling, nervousness, difficulty speaking, sensory disturbance, difficulty sleeping, stiffness, weakness)
- X<sub>13</sub> = Affective aspect (anger, fear, irritability, excited, worried, insecure)
- X<sub>14</sub> = Aspects of behavior (shy, tense, restless, rapid respiration, pale face, arms stiff, hesitant)
- X<sub>15</sub> = The social aspect (difficult to interact, socialize fear, fear of being criticized, excess).
- X<sub>2</sub> = Mathematical Connection Capability Variable
- X<sub>21</sub> = Using mathematical connections associated with other areas of study.
- X<sub>22</sub> = Using mathematical connections associated with everyday life.
- X<sub>23</sub> = Using a mathematical connection between math topics with other mathematical topics.
- X<sub>24</sub> = Using a mathematical connection between math topics in mathematics itself.
- X<sub>3</sub> = Learning Independent Variable.
- X<sub>31</sub> = Applying own learning objectives.
- X<sub>32</sub> = Monitor progress and evaluate learning outcomes.
- X<sub>33</sub> = Selecting appropriate learning strategies.
- X<sub>4</sub> = Mathematics Learning Outcomes Variable
- X<sub>41</sub> = Got it.
- X<sub>42</sub> = Understanding.
- X<sub>43</sub> = Explain

From the data, the value of the t-value variables Anxiety (X<sub>1</sub>) to Independent Learning Variable (X<sub>3</sub>) is of 1.93. Value t-value variables Anxiety (X<sub>1</sub>) to Learning Outcomes Variable (X<sub>4</sub>) is approximately 2.92. Further variables Mathematical Ability Connection (X<sub>2</sub>) to Independent Learning Variable (X<sub>3</sub>) t-value is the value of 2.99. Then the t-value Mathematical Connection Capability Variable (X<sub>2</sub>) to Learning Outcomes Variable (X<sub>4</sub>) is 4.75. at last, the t-value Independent Learning Variable (X<sub>3</sub>) to Learning Outcomes variable (X<sub>4</sub>) was at 2.78.

It can be seen that the significance between the variable with the highest value t is owned by the dimensions of Mathematical Ability Connection (X<sub>2</sub>) to Learning Outcomes Variable (X<sub>4</sub>) in the amount of 4.75, followed sequentially by Mathematical Connections Capabilities variable (X<sub>2</sub>) to Independent Learning Variable (X<sub>3</sub>) with a value of t value of 2.99, then the variable Anxiety (X<sub>1</sub>) to Learning Outcomes Variable (X<sub>4</sub>) of 2.92, after the Independent Learning Variable (X<sub>3</sub>) to Learning Outcomes Variable (X<sub>4</sub>) at 2.78, and the last but not least variable Anxiety (X<sub>1</sub>) to Independent Learning Variable (X<sub>3</sub>) with t value of 1.93. Mathematical Connections ability variable means (X<sub>2</sub>) to Learning Outcomes Variable (X<sub>4</sub>) most significantly among others.

From the data variable relationship Anxiety (X<sub>1</sub>) to Independent Learning Variable (X<sub>3</sub>) is 0.22. Great correlational Anxiety Variable (X<sub>1</sub>) to Learning Outcomes Variable (X<sub>4</sub>) is 0.27. Further variables Mathematical Ability Connection (X<sub>2</sub>) to Independent Learning Variable (X<sub>3</sub>) relationship value is 0.36. Then the great value of

the relationship dimension Mathematical Ability Connection ( $X_2$ ) to Learning Outcomes Variable ( $X_4$ ) is of 0.54. Recently the value relations Learning Independent Variable ( $X_3$ ) to Learning Outcomes Variable ( $X_4$ ) is 0.29.

It can be seen that the relationship between variables with the highest value held by the Mathematical Connection Capability Variable ( $X_2$ ) to Learning Outcomes Variable ( $X_4$ ) of 0.54. Followed sequentially by Mathematical Connections Capabilities variable ( $X_2$ ) to Independent Learning Variable ( $X_3$ ) with the value of the relationship of 0.36. Then the Correlational Independent Learning Variable ( $X_3$ ) to Learning Outcomes Variable ( $X_4$ ) 0.29. Furthermore, the Correlational Anxiety Variable ( $X_1$ ) to Learning Outcomes Variable ( $X_4$ ) of 0.27. Recently lowest is Correlational Anxiety Variable ( $X_1$ ) to Independent Learning Variable ( $X_3$ ) of 0.22.

Having analyzed through quantitative research will then be analyzed qualitative based on existing theories. Based on the theory, saying that the higher the Anxiety student learning outcomes will be lower, so does the relationship between Anxiety towards independent learning, the higher the student Anxiety learning Independent would be lower. At first the relationship between the variables Anxiety ( $X_1$ ) to Learning Outcomes Variable ( $X_4$ ) of 0.27, and Correlational Anxiety Variable ( $X_1$ ) to Independent Learning Variable ( $X_3$ ) of 0.22. It can be seen that the Correlational Anxiety Variable ( $X_1$ ) to another variable has the lowest value compared to the relationship between other variables, it shows that in this study the variables Anxiety ( $X_1$ ) Open University students in Lampung of Mathematics subject is not so influential on other variables. So although high anxiety is not a big impact on independent learning and learning outcomes. This may be due to the general Open University students in Lampung of Mathematics subject is not so care about these subjects, they only live a liability or only limited exercise alone, but it can also be caused by a tutor who teaches well so as not to cause anxiety in students.

Next is the relationship between the ability Connections Mathematically ( $X_2$ ) with Independent Learning ( $X_3$ ) and Learning Outcomes ( $X_4$ ), based on the theory of the higher ability Connections Mathematically ( $X_2$ ), the Independent Learning ( $X_3$ ) will be higher, so the ability Connections Mathematically ( $X_2$ ) They adversely affect the Independent of Learning ( $X_3$ ). The higher the Mathematical Ability Connection ( $X_2$ ), the Learning Outcomes ( $X_4$ ) will be higher, so the ability of Mathematical Connections ( $X_2$ ) greatly affects learning outcomes ( $X_4$ ). It is evident from this study, it can be seen that the relationship between the ability of Mathematical Connections ( $X_2$ ) with Independent Learning ( $X_3$ ) is 0.36, and the relationship between the ability of Mathematical Connections ( $X_2$ ) with the Learning Results ( $X_4$ ) of 0.54. Both the relationship between these variables has the highest value among other variables, in particular the relationship between the ability of Mathematical Connections ( $X_2$ ) with the Learning Outcomes ( $X_4$ ) of 0.54.

The next relationship is the relationship between Independent Learning ( $X_3$ ) with the Learning Results ( $X_4$ ). Based on the theory of independent learning will have a positive relationship with Learning Outcomes ( $X_4$ ). If Independent Learning ( $X_3$ ) higher than the Learning Outcomes ( $X_4$ ) will be higher as well. This is appropriate, because it is based on this study it was found that the relationship between Independent Learning ( $X_3$ ) with the Learning Results ( $X_4$ ) is 0.29.

Furthermore, if evaluated the contribution of each dimension of each variable, the variable Anxiety ( $X_1$ ) are as follows: Cognitive Aspect ( $X_{11}$ ) contribution 0,64; Physiological Aspect ( $X_{12}$ ) contribution 0,62; Affective Aspect ( $X_{13}$ ) contribution 0,75; Behavioral Aspect ( $X_{14}$ ) contribution 0,77; Social Aspect ( $X_{15}$ ) contribution 0,65. The contribution from the data owned by the dimensions of Behavioral Aspects ( $X_{14}$ ) that is equal to 0.77. Behavioral aspects ( $X_{14}$ ) include: shy, tense, restless, rapid respiration, pale face, arms stiff, hesitant. The second contribution is occupied by the dimensions of the Affective Aspect ( $X_{13}$ ) of 0.75. Affective aspects ( $X_{13}$ ), include: anger, fear, irritability, excited, worried, insecure. Third contributions is occupied by the dimensions of Social Aspects ( $X_{15}$ ) that is equal to 0.65. Social Aspects ( $X_{15}$ ), include: difficult to interact, socialize fear, fear of being criticized, and excessive. Contributions fourth dimension occupied by Cognitive Aspects ( $X_{11}$ ) that is equal to 0.64. Social Aspects ( $X_{11}$ ), include: difficulty concentrating, forgetfulness, difficult to understand, difficult to work. Lastly, the contribution fifth dimension occupied by Physiological Aspects ( $X_{12}$ ) of 0.62. Physiological aspects ( $X_{12}$ ) include: shaking, nervousness, difficulty speaking, sensory disorders, sleeplessness, stiff, limp.

Contribution to the dimension of Mathematical Connection Capability Variable ( $X_2$ ) as follows: using mathematical connections associated with other subject areas ( $X_{21}$ ) contribution 0,59; using mathematical connections associated with everyday life ( $X_{22}$ ) contribution 0,58; using a mathematical connection between math topics with other mathematical topics ( $X_{23}$ ) contribution 0,59; using a mathematical connection between math topics in mathematics itself ( $X_{24}$ ) contribution 0,82. From this data contribution to Mathematical Connection Capability Variable ( $X_2$ ), the largest owned by the dimensions using a mathematical connection between math topics in mathematics itself ( $X_{24}$ ), amounting to 0.82. The second contribution is occupied by the dimensions using mathematical connections associated with other subject areas ( $X_{21}$ ) and using mathematical connection between math topics with other mathematical topics ( $X_{23}$ ), each of 0.59. Finally, the third contribution is occupied by the dimensions using mathematical connections associated with everyday life ( $X_{22}$ ) 0,58.

Contribution dimension towards Independent Learning Variable ( $X_3$ ) are as follows: Setting a goal of learning itself ( $X_{31}$ ) contribution 0,55; Monitoring progress and evaluating learning outcomes ( $X_{32}$ ) contribution

0,73; Choosing the appropriate learning strategies ( $X_{33}$ ) contribution 0,61. From this data, contribution to the variable dimensions Independent Learning ( $X_3$ ), the largest owned by the dimensions of monitor progress and evaluate learning outcomes ( $X_{32}$ ) by 0.73. The second contribution is occupied by the dimensions selecting appropriate learning strategies ( $X_{33}$ ) of 0.61. Finally, the third contribution is occupied by the dimensions applying own learning objectives ( $X_{31}$ ) of 0.55.

Variable dimensions contribution to Mathematics Learning Outcomes ( $X_4$ ) are as follows: Understanding ( $X_{41}$ ) contribution 0,56; Apprehending ( $X_{42}$ ) contribution 0,57; Explaining ( $X_{43}$ ) contribution 0,78. From this data contribution to the variable dimensions Independent Learning ( $X_4$ ) is owned by the largest dimension explain ( $X_{43}$ ) was 0.78. The second contribution is occupied by the dimensions of Apprehending ( $X_{42}$ ) of 0.57. Finally, the third contribution is occupied by the dimensions of Understanding. ( $X_{41}$ ) of 0.56.

Suitability test conducted to evaluate the degree of suitability/goodness of fit (GOF) between the data model. In this study presented the criteria used to test the accuracy of the model is based on the criteria of GFI or Goodness of Fit Index, RMSEA (Root Mean Square Error of Approximation) and RMSR (Root Mean Square Residual). Criteria Goodness of Fit Indicators (GFI) are as follow:  $GFI = 1,00$  means perfectly matched;  $0,90 \leq GFI < 1,00$  means matched;  $0,80 \leq GFI < 0,90$  means closely matched. Criteria Root Mean Square Error of Approximation (RMSEA):  $RMSEA \leq 0,05$  means closely matched;  $0,05 < RMSEA \leq 0,08$  means matched. Criteria Root Mean Square Residual (RMR):  $RMR = 0$  means perfectly matched;  $RMR \leq 0,05$  means matched. Criteria Adjusted Goodness of Fit Indices (AGFI) are as follow:  $AGFI = 1,00$  means perfectly matched;  $0,90 \leq AGFI < 1,00$  means matched;  $0,80 \leq AGFI < 0,90$  means closely matched. Criteria Normed-Fit Index (NFI):  $NFI \geq 0,90$  means matched;  $0,80 \leq NFI < 0,90$  means closely matched. Criteria Comparative Fit Index (CFI):  $CFI \geq 0,90$  means matched;  $0,80 \leq CFI < 0,90$  means closely matched. Criteria Relative Fit Index (RFI):  $RFI \geq 0,90$  means matched;  $0,80 \leq RFI < 0,90$  means closely matched (Wijanto 2008).

Overall Value Size of the Degree of Suitability Model Goodness of Fit measurement from the calculation value of the Absolute Fit Measures as follow: GFI 0.91 (Matched), RMSEA 0.061 (Matched), RMSR 0.18 (Closely Matched) and the Value of Incremental Fit Measures: AGFI 0.87(Matched), NFI 0.93 (Matched), CFI 0.93 (Matched), RFI 0.92 (Matched). Based on data, it can be seen that there is one size of GOF showing the results of matches across both, and 6 GOF size that indicates a good fit include GFI, RMSEA, AGFI, NFI, CFI and RFI. This indicates that although there is one size of GOF that indicates a match is not good, but most of the GOF size showed a good fit so that it can be concluded that the overall model is a good match (model fit). From the results of the test conducted on 15 models that all the model dimensions declared fit.

## 5. Conclusion

The conclusion of this research is “there is a correlation or the influence of all observed variables, both variables anxiety, variable mathematical connection capabilities and variables on learning outcomes independent learning in mathematics”. This means that mathematic’ student learning outcomes of Open University in Lampung province is affected by anxiety, mathematical connection capability and independent learning. This research can be used as material consideration and recommendations to Open University in Lampung province in particular and Open University throughout Indonesia in general, to improve the process of learning mathematics in improving learning outcomes of mathematics, both from factors tutor, the tutorials, methods tutorials and psychological conditions of students.

These factors become very important in view of mathematics learning is still a subject of concern and some even feared by almost all students Open University in Lampung province. One factor that is important is the psychology or the state of students in learning. Usually anxiety is a major problem in mathematics. Anxiety arise from several causes such as, less pleasant tutor factor, less innovative learning models and interactive, or indeed very low ability students.

Anxiety that appears will greatly affect cognitive abilities in learning mathematics. One of the important mathematical ability is a mathematical connection capability. Mathematical connection capability will be able to connect mathematical concepts that have been already learned. Anxiety can cause mathematical connection capability and be the connecting factor to low learning Independent, while Open University implement distance learning process that requires students to be independent in learning. If independent learning mathematics students, especially low or even disappear naturally results obtained studying mathematics will also be low. So that the learning of mathematics should be given the seriousness of the process tutorial as well as other subjects that can increase anxiety levels of students.

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