DEVELOPMENT OF NON-TEST INSTRUMENTS FOR LEARNING INDEPENDENCE AND LEARNING ANXIETY IN JUNIOR HIGH SCHOOL MATHEMATICS

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ABSTRACT

The purpose of developing this research instrument is to obtain a valid, valid and reliable instrument of learning independence and mathematical anxiety before being used in research. Proving the validity and reliability of the research instrument was carried out through content validity, construct validity and reliability tests. The content validity test was carried out by 2 research experts and construct validation based on instrument testing. The research method uses research and development by using the steps of preparing the questionnaire instrument developed by Purwanto. The trial was conducted at SMP Negeri 13 Satarmese involving 42 research samples from a total of 86 research populations. Determination of the trial sample is done by random sampling technique. This study uses a non-test instrument in the form of a questionnaire. Data collection techniques used non-test techniques and were analysed using analytical techniques developed by Aiken, namely the ratio of content validity of Aiken's V items in content validity testing. While the analysis technique in testing the validity of the construct using Bivariate Pearson correlation and reliability testing were performed using the Cronbach Alpha formula. The results showed that 1) the results of developing the instrument obtained 40 statements of learning independence and 40 statements of mathematical anxiety, 2) the results of content validity testing of the 40 items of statements of learning independence instruments and the 40 items of statements of mathematical anxiety instruments showed that all of them were valid, 2) the results of the construct validity test, there are 30 valid learning independence instrument statements and 10 invalid statements, and 3) there are 30 valid mathematical anxiety instrument statements and 10 invalid statements. In addition, the results of the instrument reliability test showed that the reliability level of the student learning independence questionnaire was in the high category, namely 0, 829 and the level of reliability of the students' mathematical anxiety questionnaire was in the high category, namely 0.887. Thus, the instrument items are valid and reliable, suitable for use in research.

Keywords: *mathematical anxiety; independent learning; content validity; construct validity*

INTRODUCTION

Nowadays scientific research is needed in human life. The implementation of scientific research is based on human efforts to find answers to various questions. There is a gap between what happened (*das sein*) and what should have happened (*das sollen*). Therefore, "research is a process of investigating or searching for something (facts and principles) that is carried out systematically, carefully,

critically (critical thinking) and must be done seriously" (Mudjia, 2010). One of the determinations of the quality of a study is determined by the level of validity and reliability of the research instrument. Therefore, the development of good quality research instruments must be proven by the results of the validity and reliability test of the instrument. The validity of the instrument used lies in its functioning to measure what should be measured, so as to provide information in accordance with real conditions (Arikunto, 2019). While the reliability of the instrument lies in the consistency of the measurement results if the measurement is carried out twice or more on the same symptoms using the same measuring instrument (Sugiyono, 2019).

As a research instrument, the development of a non-test instrument for learning independence and mathematical anxiety really needs to be tested for the validity and reliability of the instrument. The development of the instrument in this discussion is based on the indicators of learning independence put forward Sumarni & Sumarmo (2016) and Efendi et al. (2018) and indicators of mathematical anxiety proposed by Cavanagh & Sparrow (2010).

Learning independence is a person's behaviour that comes from self-awareness will utilize the ability to take initiative, ability to solve problems, awareness of self-confidence, responsibility to be able to do things on their own without depending on others (Nurfadilah & Hakim, 2019). Asrori (2020) said that an independent student is a student who is confident and has principles in his life so that he will be quite able to carry out learning activities without having to depend on others. Some of these indicators include: 1) Learning initiatives; have a willingness that comes from within students to learn, seek information, and carry out useful activities to increase their knowledge and skills. 2) Learning needs; determine what is needed to obtain the objectives to be achieved in learning activities. 3) Determine learning objectives; determine the results to be obtained in learning activities. 4) Seeing difficulties as challenges; confident in the ability to complete tasks that have difficult criteria and require high accuracy and are influenced by motivation that comes from within or from other parties (teachers, friends, parents, and others). 5) Utilize and seek relevant sources; determine and use learning resources (print, online, or other learning resources) adapted to the material. 6) Select and establish a strategy; determine alternative strategies/methods that make it easier for students to achieve the learning objectives/tasks to be obtained. 7) Evaluating the process and learning outcomes; conduct an examination of the implementation of learning activities that are adapted to the plans and strategies that have been set, as well as learning outcomes that are in accordance with learning needs (knowledge, skills, and attitudes). 8) Self-efficacy.

In addition to independent learning, the Canadian Mental Health Association (2015) defines anxiety as a normal emotional reaction in humans to various external events that occur in everyday life. Anxiety is seen as one of the early warning systems that humans have of dangers and threats from outside themselves (Christianto et al., 2020). Amam et al. (2019) defines math anxiety as a feeling of tension, anxiety or fear that interferes with math performance. As a result, students

tend to avoid situations where they must learn and do math.

Cavanagh & Sparrow (2010) explain the indicators of mathematical anxiety into 3 aspects, namely 1) attitudinal aspects; 2) cognitive aspects; 3) somatic aspect. More broadly Cooke et al. in Sudarwati & Nurhayati (2020) illustrates that a person's math anxiety can be identified from 4 indicators, including: 1). Attitude (sociological). Attitude is an indicator of mathematical anxiety related to student behaviour in learning mathematics. Viewed from the perspective of student attitudes, students tend to feel afraid and panic when asked to solve problems in front of the class. This fear and panic arise because they are embarrassed to be laughed at by their friends if they are not able to solve the problem correctly. Students are not confident in their own abilities. 2) Somatic (physiology). Somatic is an indicator of mathematical anxiety related to changes in the condition of the human body. In utility, this indicator cannot be fully carried out by observation through observation, because changes in the condition of the human body cannot be fully observed with the eye. For example, uncomfortable, worried, or anxious. Some aspects that can be observed from changes in student body conditions, such as sweating bodies, dry mouth, fast heartbeats caused by something that affects them. 3) Cognitive (psychological). Cognitive indicators are related to changes in students' cognition when learning mathematics. This indicator of mathematical anxiety is more directed to students' concentration when studying in class, such as not being able to think clearly, easily forgetting and giving up hope. 4) Mathematics knowledge/understanding (mathematical knowledge). This indicator of mathematical anxiety arises related to his limitations in understanding mathematical knowledge.

However, there are some difficulties that will be encountered in measuring mathematical anxiety and student learning independence as described by Lawrence in relation to self-esteem (Setyawati, 2018), such as (1) the lack of awareness that students have in understanding themselves, (2) the language used can be interpreted differently by students, and (3) students often give responses that are in accordance with what the teacher expects but do not reflect the actual situation. Lawrence also revealed several types that were suggested to measure a person's level of learning independence and mathematical anxiety, including: Behavioural Checklist, Questionnaire, Rating Scale, Adjectival Discrepancies and Semantic Differential, Q-sort, Projective Technique, and Personal Interview.

Based on the description above, objective facts show that researchers often do not talk about the data collection tools used are valid and reliable. Without this information, the reader is not sure whether the data collected really describes the phenomenon to be measured. Therefore, for the results of the research to be scientifically justified, information regarding the validity of the measuring instrument must be conveyed in detail.

METHODOLOGY

The design of this research is in the form of research & development of non-test instruments for learning independence and mathematical anxiety. The steps in compiling the research instrument are carried out as developed Purwanto (2018) as follows. 1) identify the variables that will be the object of research, 2) find/determine the indicators of each research variable, 3) compose statement items for each research variable indicator, 4) determine the research scale score, 5) determine where the items are placed, 6) to test the instrument, 7) use the instrument to collect data.

These instruments were tested for validity through content validity and construct validity and reliability testing. The content validity of the instrument was carried out by involving 2 lecturers with doctoral degrees (Dr.) from the research and educational evaluation master's program at Ganesha University of Education. The validation process from the panellists used a Likert scale, namely 1) very irrelevant, 2) irrelevant, 3) less relevant, 4) relevant, and 5) very relevant. The process of determining the validity is carried out using an analytical technique developed by Aiken, namely the ratio of the content validity of Aiken's V with the following formula (Azwar, 2016).

$$V = \frac{\sum s}{n(c-1)}$$

Information:
V : Coefficient value Aiken's V
s : Score assigned every ratter minus the lowest score in the category used (r – lo)
lo : The lowest rating score (eg 1)
c : Highest rating score (eg 5)
r : The score given by the assessor

$$r_{xy} = \frac{n\,(\sum XY) - (\sum X)\,(\sum Y)}{\sqrt{\{n(\sum X^2) - (\sum X)^2\}\ \{n(\sum Y^2) - (\sum Y)^2\}}}$$

Information:
X = item score
Y = total score
n = many respondents

The criteria for determining a statement item are declared valid if the Pearson value (r_{count}) > r_{table} at a significance level of 5% (db = N-2). Besides being able to be determined by comparing the value of r_{count} with r_{table}, it can also be seen from the value of Sig <0.05, the statement item is declared valid.

In addition to the validity test, the instrument reliability test was carried out using the Alpha Cronbach formula because the research instrument was in the form of a stratified scale. Cronbach's Alpha formula is as follows.

$$r_{11} = \left(\frac{n}{n-1}\right)\left(1 - \frac{\sum {S_i}^2}{{S_t}^2}\right)$$

The criteria used in determining the validity of the statement items is the value of V > 0.60. This technique is used to measure the degree of agreement of the experts from one item and which can express the level of instrument validity.

In addition, construct validity was carried out based on data from trials conducted at SMP Negeri 13 Satarmese, West Satarmese sub-district, Manggarai Regency. The trial was conducted by involving 42 research samples from a total of 86 research populations. The scale model developed adopts the model developed by Likert with five alternative answers, namely Very Appropriate (SS), Appropriate (S), Not Appropriate (TS) and Very Unsuitable (STS) so that the distribution of respondents' attention to the answer options is not too broad so that the suitability of the choice is more realistic.

Testing the validity of the instrument items using Bivariate Pearson correlation (Pearson Moment Product), with the Product Moment Correlation formula as follows:

Information:
r_{11} = instrument reliability
n = many items
$\sum S_i^2$ = number of item variances
S_t^2 = total variance

The criteria for determining a test item are declared reliable are adjusted to guidelines draw conclusions from the following calculation results:
0.00 - 0.20 degrees of reliability is very low
0.21 - 0.40 degrees of low reliability
0.41 - 0.70 degrees of moderate reliability
0.71 - 0.90 degrees of high reliability
0.91 - 1.00 degree of reliability is very high
In this study, the provisions set for a test item are declared reliable if they have an alpha value > 0.7.

RESULT AND DISCUSSION

Learning Independence Questionnaire Instrument

Learning Independent Instruments Grid

Based on the results of the development of the learning independence instrument, the lattice of the learning independence instrument was obtained as follows.

Indicator	Item Number		Amount
	+	-	
1) Study initiative	1, 2, 3, 4	5, 6	6
2) Study needs	7, 8, 9	10, 11	5
3) Determining learning goals	12, 14, 25,	13	4
4) Seeing adversity as a challenge	15, 16	17, 18, 19	5
5) Utilize and look for relevant sources.	20, 21	22, 23, 24	5
6) Choose, and set a strategy	26, 27,28	29, 30, 31	6
7) Evaluating learning processes and outcomes	32, 33	34, 35	4
8) *Self-efficacy*	36, 37, 38, 39	40	5

Content Validity Analysis of Independent Learning Instruments

The assessment data of the experts above were analysed using the analytical technique developed by Aiken, then it is obtained, for Item 1 (n: 2, c: 5)
$V = \frac{\sum s}{n(c-1)} = \frac{(4-1)+(4-1)}{2(5-1)} = \frac{6}{8} = 0{,}75$ (Valid because V > 0.60).
Overall, the value of V for each item can be presented in the following table.

Validator	Item 1		Item 2		Item 3		Item 4		Item 5		Item 6		Item 7		Item 8		Item 9		Item 10	
	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s
Judges 1	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3

Judges 2	4 3	4 3	4 3	5 4	4 3	4 3	4 3	4 3	4 3	3 2
s	6	6	6	7	6	6	6	6	6	5
V	0.75	0.75	0.75	0.88	0.75	0.75	0.75	0.75	0.75	0.63
V standard	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Note.	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Valid

Validator	Item 11		Item 12		Item 13		Item 14		Item 15		Item 16		Item 17		Item 18		Item 19		Item 20	
	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s
Judges 1	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3
Judges 2	3	2	4	3	3	2	4	3	4	3	4	3	4	3	4	3	4	3	5	4
s	5		6		5		6		6		6		6		6		6		7	
V	0.63		0.75		0.63		0.75		0.75		0.75		0.75		0.75		0.75		0.88	
V standard	0.60		0.60		0.60		0.60		0.60		0.60		0.60		0.60		0.60		0.60	
Note.	Valid		Valid		Valid		Valid		Valid		Valid		Valid		Valid		Valid		Valid	

Validator	Item 21		Item 22		Item 23		Item 24		Item 25		Item 26		Item 27		Item 28		Item 29		Item 30	
	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s
Judges 1	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3
Judges 2	5	4	4	3	4	3	4	3	4	3	5	4	5	4	5	4	3	2	3	2
s	7		6		6		6		6		7		7		7		5		5	
V	0.88		0.75		0.75		0.75		0.75		0.88		0.88		0.88		0.63		0.63	
V standard	0.60		0.60		0.60		0.60		0.60		0.60		0.60		0.60		0.60		0.60	
Note.	Valid		Valid		Valid		Valid		Valid		Valid		Valid		Valid		Valid		Valid	

Validator	Item 31		Item 32		Item 33		Item 34		35 Item		Item 36		Item 37		Item 38		Item 39		Item 40	
	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s
Judges 1	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3
Judges 2	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3
s	6		6		6		6		6		6		6		6		6		6	
V	0.75		0.75		0.75		0.75		0.75		0.75		0.75		0.75		0.75		0.75	
V standard	0.60		0.60		0.60		0.60		0.60		0.60		0.60		0.60		0.60		0.60	
Note.	Valid		Valid		Valid		Valid		Valid		Valid		Valid		Valid		Valid		Valid	

Based on the results of the validity test above, it can be concluded that the learning independence questionnaire item has a value of V > 0.60, meaning that the 40 learning independence questionnaire items can be used in research.

Construct Validity Analysis of Learning Independence Questionnaire Items

The research data were analysed using Bivariate Pearson correlation (Pearson Moment Product), with the Product Moment Correlation formula as follows:

$$r_{xy} = \frac{n(\sum XY) - (\sum X)(\sum Y)}{\sqrt{\{n(\sum X^2) - (\sum X)^2\}\{n(\sum Y^2) - (\sum Y)^2\}}}.$$

Calculation of the correlation coefficient of Item (X) to the total score (Y) can be assisted by using the IBM SPSS Statistics 25 application program. Based on the calculation of the correlation coefficient of Item (X) to the total score (Y) and converted to r_{table} (N: 40) of 0.312, then the validity of the questionnaire is obtained as follows.

Item Number	Rxiyi	Criteria	Decision	Item Number	rxiyi	Criteria	Decision
1	0.443	Valid	Worn	21	0.190	Invalid	Not used
2	0.185	Invalid	Not used	22	0.432	Valid	Worn
3	0.169	Invalid	Not used	23	0.323	Valid	Worn
4	0.396	Valid	Worn	24	0.436	Valid	Worn
5	0.560	Valid	Worn	25	0.479	Valid	Worn
6	0.175	Invalid	Not used	26	0.463	Valid	Worn
7	0.467	Valid	Worn	27	0.338	Valid	Worn
8	0.354	Valid	Worn	28	0.013	Invalid	Not used
9	0.406	Valid	Worn	29	0.329	Valid	Worn
10	0.423	Valid	Worn	30	0.363	Valid	Worn
11	0.440	Valid	Worn	31	0.460	Valid	Worn
12	0.411	Valid	Worn	32	0.014	Invalid	Not used
13	0.168	Invalid	Not used	33	0.265	Invalid	Not used
14	0.261	Invalid	Not used	34	0.365	Valid	Worn
15	0.401	Valid	Worn	35	0.318	Valid	Worn
16	0.381	Valid	Worn	36	0.326	Valid	Worn
17	0.347	Valid	Worn	37	0.493	Valid	Worn
18	0.370	Valid	Worn	38	0.274	Invalid	Not used
19	0.353	Valid	Worn	39	0.346	Valid	Worn
20	0.363	Valid	Worn	40	0.391	Valid	Worn

Based on the test results above, it can be concluded that there are 30 items of mathematical anxiety questionnaire statements that have a value of $r_{count} > r_{table}$. This means that there are 30 items of learning independence questionnaire statements that are valid and can be used in research.

Learning Independence Questionnaire Reliability Testing

The results of the analysis showed that the level of reliability of the student learning independence questionnaire was in the high category, namely 0.829.

Reliability Statistics	
Cronbach's Alpha	N of Items
.829	30

Mathematical Anxiety Questionnaire Instrument

Grid - Mathematical Anxiety Questionnaire Grid

Based on the results of the development of mathematical anxiety instruments, the lattice of independent

learning instruments is obtained as follows.

No	Indicator	Sub Indicator	Item Number		Amount
			+	-	
1)	*Attitudinal*	Distrust of yourself	1, 2	3, 4, 5	5
		Don't want to do something that should be done	6	7, 8	3
		Expectations about difficulty in doing something	9, 10	11	3
2)	*Somatic*	Difficulty breathing		12, 13	2
		Heart pounding		14, 15, 16, 17	4
		Uncomfortable feeling	18	19, 20, 21, 22, 23	6
3)	*Cognitive*	Feeling worried	24	25, 26, 27	4
		Empty mind		28, 29, 30, 31, 32	5
4)	*Mathematics knowledge/ understanding*	Fear of not understanding enough of the subject matter	33, 34, 35	36, 37	5
		Fear of not being able to do the problem	38, 39	40	3

Content Validity Analysis of Mathematical Anxiety Instruments

The process of proving content validity is carried out using an analytical technique developed by Aiken, namely the ratio of the validity of Aiken's V items with the following formula(Azwar, 2016). Based on the calculation of content validity, it is obtained, for Item 1 (n: 2, c: 5) $V = \frac{\sum s}{n(c-1)} = \frac{(4-1)+(5-1)}{2(5-1)} = \frac{7}{8} = 0{,}88$ (Valid because V > 0.60).

Overall, the value of V for each item can be presented in the following table.

Validator	Item 1		Item 2		Item 3		Item 4		Item 5		Item 6		Item 7		Item 8		Item 9		Item 10	
	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s
Judges 1	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3
Judges 2	5	4	4	3	4	3	4	3	4	3	5	4	5	4	4	3	5	4	5	4
s	7		6		6		6		6		7		7		6		7		7	
V	0.88		0.75		0.75		0.75		0.75		0.88		0.88		0.75		0.88		0.88	
V standard	0.60		0.60		0.60		0.60		0.60		0.60		0.60		0.60		0.60		0.60	
Note.	Valid		Valid		Valid		Valid		Valid		Valid		Valid		Valid		Valid		Valid	

Validator	Item 11		Item 12		Item 13		Item 14		Item 15		Item 16		Item 17		Item 18		Item 19		Item 20	
	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s
Judges 1	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3
Judges 2	4	3	4	3	4	3	4	3	4	3	5	4	5	4	5	4	5	4	5	4

s	6	6	6	6	6	7	7	7	7	7
V	0.75	0.75	0.75	0.75	0.75	0.88	0.88	0.88	0.88	0.88
V standard	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Note.	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Valid

Validator	Item 21		Item 22		Item 23		Item 24		Item 25		Item 26		Item 27		Item 28		Item 29		Item 30	
	r	s	r	S	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s
Judges 1	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3
Judges 2	5	4	5	4	5	4	4	3	4	3	3	2	3	2	3	2	4	3	4	3
s	7		7		7		6		6		5		5		5		6		6	
V	0.88		0.88		0.88		0.75		0.75		0.63		0.63		0.63		0.75		0.75	
V standard	0.60		0.60		0.60		0.60		0.60		0.60		0.60		0.60		0.60		0.60	
Note.	Valid		Valid		Valid		Valid		Valid		Valid		Valid		Valid		Valid		Valid	

Validator	Item 31		Item 32		Item 33		Item 34		35 Item		Item 36		Item 37		Item 38		Item 39		Item 40	
	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s
Judges 1	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3
Judges 2	4	3	4	3	3	2	5	4	4	3	4	3	4	3	4	3	4	3	4	3
s	6		6		5		7		6		6		6		6		6		6	
V	0.75		0.75		0.63		0.88		0.75		0.75		0.75		0.75		0.75		0.75	
V standard	0.60		0.60		0.60		0.60		0.60		0.60		0.60		0.60		0.60		0.60	
Note.	Valid		Valid		Valid		Valid		Valid		Valid		Valid		Valid		Valid		Valid	

Based on the results of the validity test above, it can be concluded that the 40 items of the learning independence questionnaire statement have a value of V > 0.60, meaning that the 40 items of the learning independence questionnaire can be used in research.

Construct Validity Analysis of Mathematical Anxiety Questionnaire Items

The research data were analysed using Bivariate Pearson correlation (Pearson Moment Product), with the Product Moment Correlation formula as follows:$r_{xy} = \frac{n(\sum XY) - (\sum X)(\sum Y)}{\sqrt{\{n(\sum X^2) - (\sum X)^2\}\{n(\sum Y^2) - (\sum Y)^2\}}}$.

The calculation of the item correlation coefficient (X) to the total score (Y) can be assisted by using the IBM SPSS Statistics 25 application program. The results of the calculation of the mathematical anxiety questionnaire correlation coefficient and converted to a r_{table} (N: 40) of 0.312, the validity of the questionnaire is obtained as follows.

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No.	R_{xiyi}	Criteria	Decision	No.	r_{xiyi}	Criteria	Decision

Item				Item			
1	0.057	Invalid	Not used	21	0.481	Valid	Worn
2	0.088	Invalid	Not used	22	0.583	Valid	Worn
3	0.442	Valid	Worn	23	0.574	Valid	Worn
4	0.530	Valid	Worn	24	0.028	Invalid	Not used
5	0.332	Valid	Worn	25	0.529	Valid	Worn
6	0.636	Valid	Worn	26	-0.040	Invalid	Not used
7	0.411	Valid	Worn	27	0.358	Valid	Worn
8	0.218	Invalid	Not used	28	0.468	Valid	Worn
9	0.068	Invalid	Not used	29	0.478	Valid	Worn
10	0.124	Invalid	Not used	30	0.499	Valid	Worn
11	0.331	Valid	Worn	31	0.448	Valid	Worn
12	0.482	Valid	Worn	32	0.558	Valid	Worn
13	0.453	Valid	Worn	33	0.440	Valid	Worn
14	0.456	Valid	Worn	34	0.342	Valid	Worn
15	0.400	Valid	Worn	35	0.352	Valid	Worn
16	0.051	Invalid	Not used	36	0.487	Valid	Worn
17	0.433	Valid	Worn	37	0.498	Valid	Worn
18	0.451	Valid	Worn	38	0.437	Valid	Worn
19	0.583	Valid	Worn	39	-0.007	Invalid	Not used
20	0.116	Invalid	Not used	40	0.565	Valid	Worn

Based on the test results above, it can be concluded that there are 30 items of mathematical anxiety questionnaire statements that have a value of $r_{count} > r_{table}$. This means that there are 30 items of mathematical anxiety questionnaire statements that are valid and can be used in research.

Testing the Reliability of the Mathematical Anxiety Questionnaire

The results of the analysis showed that the level of reliability of the students' mathematical anxiety questionnaire was in the high category, namely 0.887.

Reliability Statistics	
Cronbach's Alpha	N of Items
.887	30

CONCLUSION

Instrument validation has become a prerequisite in conducting research. The validity of the instrument greatly determines the quality of research data which has an impact on the quality of research. Based on the results of the development of the instrument obtained 40 items of learning independence statements and 40 items of mathematical anxiety instruments. In addition, the results of the instrument analysis show that 1) based on the content validity test of the statement items of the learning independence instrument and the mathematical anxiety instrument, the 40 statement items of the learning independence instrument and the 40 statement items of the mathematical anxiety instrument are appropriate to be used in research. This is evidenced by iken's V content validity ratio value > 0.60. 2) based on construct validity testing through Bivariate Pearson correlation analysis (Pearson Moment Product), there are 30 valid learning independence instrument statements and 10 invalid statements, and 3) there are 30 valid mathematical anxiety instrument statements and 10 invalid statements valid.

Thus, the results of the development of non-test instruments for learning independence and mathematical anxiety showed that there were 30 statements of learning independence instruments and 30 statements of mathematical anxiety instruments which were declared valid and reliable. On that basis, this instrument can be used to collect data in research. This is in line with Purwanto (2018) which says that after the validity and reliability are met, the new research instrument can be used to collect data.

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