

VALIDITY AND RELIABILITY OF LEARNING STYLE SCALE OF THE ELEMENTARY SCHOOL STUDENTS

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Abstract

This study aims to examine the validity and reliability of learning style scale of the elementary school students. This study used content and construct validity. Quantitative method and Professional expert judgement used in this study. The subjects were 45 elementary students, while the sample was took by cluster random sampling technique. The scale of the students' learning style consists of three aspects; they are visual, auditory, and kinesthetic styles. Point biserial formula is to measure the item's validity and the Alpha Cronbach coefficient is to measure the reliability. The results showed that 6 out of 54 items tested fell, so that the remaining 48 items are valid, with the range of validity index is ranging from 0.373 to 0.843. By Alpha Cronbach coefficient, it is found the reliability of students learning style is 0.890. So it can be concluded that the scale is valid and highly reliable to measure students' learning style.

Keywords: validity, reliability, students' learning style.

Introduction

Effective learning is a learning that engages students actively throughout the process. Active in the learning process, active in answering teacher's questions, and active in interacting with his classmates. Learning is said to be effective and successful if every student understands the learning concept. Students' ability to understand a learning concept is different in level. There are students with fast understanding level by reading textbooks, there are students who have a level of medium understanding which is for example students understand after hearing the teachers' explanation, and some are slow understanding level that usually prefers to form groups of learning with friends.

Students as people who are learning have different abilities in receiving learning materials and have their own uniqueness and characters. The students' uniqueness make students have

different response in understanding a lesson in terms of attitude or learning style that supports each student's concept understanding (Rijal & Suhaedir, 2015). There are many positive assumptions between learning styles and students' understanding, and vice versa students who have negative attitudes toward the learning are usually not eager to learn so that students' understanding concepts of the learning are less.

The key to each student's learning success lies in their learning style. The more they know and apply the learning style it will be more successful in learning process. This is supported by the research results of (Bire & Bire, 2014) that the learning style is the easiest way that students have in absorbing, organizing, and processing the information received in learning. An appropriate learning style is the key to students' success in learning. Students knowing the key to success in learning, students are able to absorb and process information and make learning easier with their own learning styles. The teachers' role is to direct the learning style of each student so that they are maximal in understanding the lesson concept.

Sutikno (2013) said that there are 3 styles of students' learning, they are: visual learning style, auditory learning style, and kinesthetic learning style. First, the visual learning style is a learning style that vision has an important role. Second, the auditory learning style is a learning style that relies on the learning through the ear. Students who have an auditory learning style can learn faster by verbal discussions and listening to what the teacher says. Third, the kinesthetic learning style is the learning style through moving, touching, and doing. Students who have a kinesthetic learning style are encouraged to learn through experience using a variety of learning models/equipments.

Learning styles that children use in accordance to the characteristics of lower class or higher class for example children who sit in lower classes prefer to use auditory learning style such as

listening to teacher's explanation and visual learning style by seeing pictures provided by teacher because the characteristics of lower-grade children are still in concrete thinking. Higher-grade children prefer to use kinesthetic learning style or direct practice in learning because the characteristics of higher-class children can already think abstractly. Furthermore, in this research of learning styles and concepts understanding will be seen based on Social Sciences learning in the classroom, whether the students have applied their learning styles and to know the extent of students' understanding on Social Sciences learning materials whether fast, medium, or slow.

Students that have high level or easy to accept learning and understanding the learning concept are already successful in applying the learning styles. The more students understand their own learning styles and the learning concept teach by teacher then the students learning outcomes will be maximized. The result obtained by teachers is successful in delivering the lessons to the students. There is a reciprocal between teachers and students ie teachers successfully convey lessons and students are understand the learning material concept. The more students knowing their character, knowing their ability in learning, knowing the way or style they learned then the higher the students' understanding in learning concepts. The positive impact of knowing and choosing the correct learning style for themselves is the students easily understand the learning concept. Conversely, the negative impact when students do not choose their own learning style correctly is the learning concept understanding in the lesson will be lacking.

In the process of teaching and learning activities in the classroom students need to be assisted and directed by the teacher to recognize their learning styles appropriate to themselves so that the learning objectives can be achieved effectively and students could understand the learning concept. Teachers must understand the character and personality of each student, because each

student is unique that have their own ability and character. This is supported by the results of Sutikno (2013) that the teachers' role is guiding and directing students to be able to apply their learning styles.

Each student is a unique and very special person. Unfortunately, teachers have not grouped students according to their ability or talents. This is supported by research of Bire & Bire (2014) teachers should understanding and developing the uniqueness of each student so that they can start learning in their own way. Every student is fond of fun, active, and not boring learning in the classroom. So the teachers should try to make the learning atmosphere easier and fun, learning requires learning styles or ways of learning for each student in order to understand the learning concept of a lesson.

Elementary school students have different learning styles in their learning. Each student applies the learning style or how to learn that easiest for themselves in absorbing information or subject matter. In fact there are still many elementary school students who do not know and apply the learning style because they do not know how to identify their own learning style. They do not understand the characteristics of auditory, visual, and kinesthetic learning style. Yet the key to students' success lies in their own learning style. Students who already know their learning style will be more easily understand the concept. The role of teachers is to direct the learning style of each student so that each student knows their learning style and make it easy to students understanding learning concept.

During the learning process, most teachers have not yet identified the students' learning styles. Teachers should understand about the students' learning styles, so that they can design learning in accordance to the students needs. This is because teachers do not have a standard instrument that can be used to measure students' learning styles. This adds to the urgency of

developing learning style measuring instrument in the form of a closed scale that has high validity. Based on this problem it is necessary to test the validity and reliability of the scale of student learning styles that can later be used to identify the learning styles.

Theory

Learning styles are a way of students learning that become a habit, and the habit is considered most appropriate for them. Learning styles that considered appropriate for students then repeated in every study so that every student in the learning process achieve success. Sobur (2013) said that learning styles are habits shown by individuals in processing information, knowledge, and learning a skill. Information processed in the form of learning material provide by the teacher, self-study, and study with their friends.

Karwati & Priansa (2014) said that learners' learning styles are a combination of how they absorb, and then organize and process information. Information that students learn by understanding learning styles means learning to create an environment in which everyone can learn from them, not just those using our preferred style. The result, students will be easier to receive new information and understand quickly, accurately, and effectively.

According to Utomo & Windarto (2012) learning styles are often defined as characteristics and preferences or individual choices on how to gather information, interpret, organize, respond, and think about that information. Learning styles are the key to develop performance in work, at school, and in interpersonal situations. When students are able and can recognize the learning style means students are able to absorb and process information, then students will be able to make learning and communicate more easily in accordance to their own learning style.

Amin & Suardiman (2016) said that learning styles are the easiest way that individuals have in absorbing, organizing and processing information received. The appropriate learning style is

the key to one's success in learning. Students in learning activities need to be assisted and directed to recognize learning styles that appropriate to themselves so that the learning objectives can be achieved effectively.

Summarizing from some opinions above, learning style is the easiest way that the learners have in absorbing, organizing, and processing the information received in learning. An appropriate learning style is the key to students' success in learning. Every student is aware of this, so students are able to absorb and process information and make learning easier with their own learning styles. Students in their learning activities need to be assisted and directed to recognize learning styles that suit themselves so that the learning objectives can be achieved effectively.

a. The Types of Learning Style

1) Visual Learning Style

The visual learning style is must first see the evidence and then be able to believe it. There are some characteristics that are typical for people who have this visual learning style. First, the need to see something (information / lessons) visually to know it or to understand it; second, having a strong sensitivity to colors; third, having a sufficient understanding on artistic matter; fourth, having difficulty in direct dialogue; fifth, too reactive to sound: sixth, difficult to follow verbal suggestions: seventh, often misinterpret words or utterances (Uno, 2010).

Visual learning style according to Sutikno (2013) is a learning style that vision has an important role. Teaching methods used by teachers should focus more on the media display, invite students to visit objects related to the lesson, or by showing the instrument directly to the students or describing it on the board. The appropriate form of assignment for students who have a visual learning style is observation. Students who have a visual learning style prefer to use

photos, create images, play colors, and maps to convey information and communicate with others.

2) Auditory Learning Style

According to Uno (2010) auditory learning style is a learning style that controls the hearing to be able to understand and remember information. Characteristics of this learning style actually put hearing as the primary tool of absorbing information or knowledge. So that, people with this learning style must listen, then can remember and understand the information.

According to Sutikno (2013) auditory learning style is the style of learning that relies on the success of learning through the ear. Students who have an auditory learning style can learn faster by using verbal discussions and listen to what the teacher says. Students with an auditory learning style can easily digest the meaning conveyed by voice, read the text aloud and listen to the tapes. Students who have an auditory learning style have sensitivity in tone and rhythm, usually able to sing, play a musical instrument, or recognize the sounds of various instruments.

According to Utomo & Windarto (2012) auditory learning style use the ear as a tool to absorb incoming information. Students with auditory learning styles are more likely to hear the information he or she is listening to from others such as by listening to a lecture or listening to a friend memorizing a material.

3) Kinesthetic Learning Style

According to Uno (2010) kinesthetic learning style has to touch something that provides certain information to remember it. An approach that could be used is to experience learning by using models, working in a laboratory or playing while learning. Students who tend to have kinesthetic learning style will absorb and understand information easier by tracing images or words to learn pronouncing or understanding the facts. Learning to be effective and meaningful,

people with the above characters are advised to test the memory by direct view of facts in the field.

According Sutikno (2013) kinesthetic learning style is the learning style through moving, touching, and doing. Students with this learning style are difficult to sit still for hours because their desire for activity and exploration is very strong. Students with kinesthetic learning style are encouraged to learn through experience using a variety of visual models, and learning methods that teachers can use in the learning process are role playing, simulations and so on.

According to Utomo & Windarto (2012) the kinesthetic learning style is a learning style that emphasizes the direct practice of what is being studied. Students with kinesthetic learning styles are more comfortable to be left do their activities alone or in direct practice.

Summarizes some of the above opinions, there are three learning styles: visual learning style (vision), auditory learning style (hearing), and kinesthetic learning style (moving, touching, and doing). Each student has all three learning styles, only one style usually dominates how he or she should learn. An appropriate learning style is the key to students success in learning. Students who already understand their own learning styles will find it easier to absorb the learning material using visual, auditory, or kinesthetic learning styles.

b. Identifying Learning Styles

According to DePorter & Mike (2016) identifying people with visual, auditory, kinesthetic learning styles are as follows:

- 1) People with visual learning style
 - a) neat and orderly
 - b) speak quickly
 - c) meticulous to detail

- d) have problems remembering verbal instructions unless they are written, and often ask people for help to repeat them.
 - e) remembering what is seen, rather than heard
 - f) usually not distracted by commotion
 - g) often answer questions with short answers yes or no
 - h) fast and diligent reader
 - i) forgot to convey verbal messages to others.
 - j) prefers art rather than music
- 2) People with auditory learning style
- a) talk to themselves while working
 - b) distracted by the commotion easily
 - c) learn by listening and remembering what is being discussed rather than viewed
 - d) love to read aloud and listen
 - e) find it difficult to write, but great at telling stories
 - f) usually an eloquent speaker
 - g) prefer music to art
 - h) can repeat and mimic tones, bars and sound colors
 - i) like to talk, like to discuss, and explain things at length
 - j) better at spelling out loud rather than writing it down
- 3) People with kinesthetic learning style
- a) speak slowly
 - b) standing close when talking to people
 - c) touch people to get their attention

- d) always physical oriented and move a lot
- e) learn to start manipulating and practice
- f) memorize by walking and seeing
- g) using the finger as a pointer when reading
- h) use a lot of body cues
- i) can not sit still for long time
- j) love a busy game

Methodology

This study was conducted by measuring the learning style of elementary school students using closed questionnaire with two choices of answers. Research subjects are 45 students of 4th grade Muhammadiyah Bausasran Elementary School, Yogyakarta, Indonesia. The sampling technique is cluster random sampling technique by taking 1 class as a sample.

This research used content and construct validity. Quantitative method and Professional expert judgement used in this study. The scale of the students' learning styles consists of three aspects; they are visual, auditory, and kinesthetic. Point biserial formula used to measure the items validity and the Alpha Cronbach coefficient used to measure the reliability. Both validity and reliability were tested by statistic analysis using SPSS 20 for Windows.

This paper present the scale of the students' learning styles consists of favorable and unfavorable items. There are 27 favorable questions and 27 unfavourable question written in Bahasa Indonesia with 2 choices of answers (Yes or No). The items distribution shown in Table 1 as follows:

Table 1. The Questionnaire outline of individual characteristics with learning styles characteristics based on sensory preferences.

characteristics based on sensory preferences.

Sensory Preference Dimension	Indicator	Item Number	
		Favorable (+)	Unfavorable (-)
A. Visual learners			
1	neat and orderly	1	6
2	speak quickly	13	12
3	meticulous to detail	3	10
4	remember something based on visual association	17	4
5	usually not easily distracted by commotion	7	14
6	have problems remembering verbal instructions unless they are written, and often ask people for help to repeat them.	15	16
7	forgot to convey verbal messages to others.	9	2
8	often answer questions with short answers “yes” or “no”	11	18
9	prefers art (painting, sculpturing, drawing) rather than music	5	8
B. Auditory Learners			
1	talk to themself while working	1	4
2	moving their lips and pronouncing when reading	9	12
3	love to read aloud and listen	15	18
4	can repeat and mimic tones, bars and sound colors	3	6
5	find it difficult to write, but great at telling stories	17	10
6	Speaks eloquently	5	14
7	like to talk, discuss, and explain things at length	13	8
8	having problems with jobs that involve visualization, such as cutting parts to fit each other.	11	16
9	preferring oral jokes rather than reading comedy comics.	7	2
C. Tactual (kinesthetic) Learners			
1	responding to physical attention	7	12
2	touch people to get their attention	11	4
3	standing close when talking to people	1	14
4	always physical oriented and move a lot	15	6
5	learning through direct practice or manipulation	9	8
6	memorize things by walking or looking directly	17	18
7	using a finger to point to a word read while reading	3	10
8	generally bad in handwriting	13	2
9	likes activities or games that busy (physically) want to do everything	5	16
Total Questions		27	27

Source: (DePotrter & Hernacki, 2016)

Scoring Guideline

Question Nature	“YES” Answer	“NO” Answer
Favorable (+)	1	0
Unfavorable (-)	0	1

The above questionnaire outline is translated into a more operational question as seen in table 2 below:

Table 2. Questionnaire of Students’ Learning Style

Sensory Preference Dimension	Indicator	Answer	
		Yes	No
A. Visual learners			
1	I took notes in my notebook neatly and regularly.		
2	I rarely take notes of the messages the teacher verbally tells me.		
3	After I finished the test, I checked the answer carefully.		
4	I prefer to hear the teacher explain the lesson in front of the class instead of reading the textbook.		
5	I'm more interested in seeing sculptures, paintings, pictures than listening to music.		
6	When there is an important explanation from my teacher, I chat with a friend so I do not have time to take notes.		
7	I can still concentrate on reading books despite my noisy friends in class.		
8	I do not interested in seeing sculptures, paintings, drawings; I am more interested in music.		
9	I forget what the teacher said if I did not take note on it.		
10	I immediately submit a test answer sheet to the teacher once I finish the test.		
11	I answer other people's questions with short and necessary answers.		
12	I am less active in answering questions given by the teacher.		
13	I answered the teacher's question quickly.		
14	I find it hard to concentrate on reading a book when the class atmosphere is noisy.		
15	I find it difficult to remember verbal questions from teachers.		
16	I find it easier to understand the question in writing.		
17	I prefer to see pictures in books rather than listening to teacher explanations.		
18	I give answers to other people's questions in complete.		
B. Auditory Learners			
1	I find it easier to remember lessons if I speak for myself while studying.		
2	I often spent the break time reading rather than joking with		

	friends.
3	I easily repeat the subject matter when listening to music and songs.
4	I find it hard to remember lessons while talking.
5	When expressing an opinion or answering a question, I used to speak quickly and clearly.
6	I am not fluent to sing back the song/music that has been taught by the teacher.
7	In the interlude between lessons, I prefer to joke with friends.
8	I prefer taking notes than talking during group discussions.
9	I murmured as I read the book.
10	I prefer to convey my story ideas in writing, rather than spoken.
11	I find it difficult to understand the subject matter when displayed in drawings, concept maps, or graphs.
12	I read the book quietly.
13	While working on group assignments, I actively shared my opinions.
14	I speak in front of the class with fluency.
15	When searching for information about something, I prefer it to be read out by other people rather than read it myself.
16	I easily understand material in the form of images, graphics, or concept maps.
17	I like to tell stories, but it's hard to get my story idea in writing.
18	When looking for information about something, I prefer to read it myself rather than it to be read out by other people.

C. Tactual Learners

1	When talking to friends or teachers, I have to be near them.
2	My handwriting is neat and easy to read.
3	To make it easier for me to read, I used my finger to point to the word I read.
4	When I want to ask or talk to other people, I do not need to touch the person first
5	I am excited when I come to make or fix something with my hands.
6	As I listening to the teacher's explanation, I am calm.
7	I learn well when I can touch the object being studied.
8	I find it hard to remember the subject matter being practiced.
9	I find it easier to understand the subject matter when practiced directly.
10	While reading, I do not use my index finger to point to the word I read.
11	When I want to ask or talk to others, I need to touch the person first.

12	To be able to learn well, I do not need to touch objects being studied.
13	My handwriting is not neat.
14	I do not have to stand near a teacher or friend while talking to them.
15	When the teacher explained the material in front of the class, my hands could not calm down, often playing pencils or objects near me.
16	I'm not much help in making or fixing things.
17	I memorized the subject matter while walking or moving my arms and legs.
18	When I memorize, I usually sit quietly.

Results and Discussion

This study provides an overview for the preparation of a closed questionnaire instrument to measure the learning styles of elementary school students. The completed instrument consists of 18 questions items for the auditory learning style, 18 questions items for visual learning style, and 18 questions items for kinesthetic learning style. Students are asked to fill out a learning styles questionnaire with 'Yes' or 'No' answers according to their habits. The answer key is tailored to the question characteristics (favorable question or unfavorable question). Based on the test results of construct validity as much as two tests, obtained 48 items of valid statement distributed into 16 questions items for auditory learning style, 16 questions items for visual learning style, and 16 questions items for kinesthetic learning style. Unvalid items are number 2,3,10,11,35,37. Furthermore, the third test with 48 questions items still shows high validity so that the researchers decided to stop testing after the third test result and obtained 48 valid questions. The next step is to test the reliability with alpha cronbach coefficients for 48 questions items. From the test obtained high reliability value that is 0,869. The distribution of test result data is shown in the following table:

a. Testing reliability and validity for visual learning style

Table 3. Reliability of visual learning style

Cronbach's Alpha	N of Items
0,869	16

Table 4. Validity of visual learning style

		Validitas
VAR00001	Pearson Correlation	,461 [*]
	Sig. (2-tailed)	,001
	N	45
VAR00002	Pearson Correlation	,746
	Sig. (2-tailed)	,000
	N	45
VAR00003	Pearson Correlation	,625 ^{**}
	Sig. (2-tailed)	,000
	N	45
VAR00004	Pearson Correlation	,648 ^{**}
	Sig. (2-tailed)	,000
	N	45
VAR00005	Pearson Correlation	,665 ^{**}
	Sig. (2-tailed)	,000
	N	45
VAR00006	Pearson Correlation	,601
	Sig. (2-tailed)	,000
	N	45
VAR00007	Pearson Correlation	,596 [*]
	Sig. (2-tailed)	,000
	N	45
VAR00008	Pearson Correlation	,643 ^{**}
	Sig. (2-tailed)	,000
	N	45
VAR00009	Pearson Correlation	,677 [*]
	Sig. (2-tailed)	,000
	N	45
VAR00010	Pearson Correlation	,501 [*]
	Sig. (2-tailed)	,000
	N	45
VAR00011	Pearson Correlation	,460 [*]
	Sig. (2-tailed)	,001
	N	45
VAR00012	Pearson Correlation	,601
	Sig. (2-tailed)	,000

	N	45
VAR00013	Pearson Correlation	,483*
	Sig. (2-tailed)	,001
	N	45
VAR00014	Pearson Correlation	,706
	Sig. (2-tailed)	,000
	N	45
VAR00015	Pearson Correlation	,487**
	Sig. (2-tailed)	,001
	N	45
VAR00016	Pearson Correlation	,506**
	Sig. (2-tailed)	,000
	N	45

b. Testing reliability and validity for the auditory learning style

Table 5. Reliability of Auditory learning style

Cronbach's Alpha	N of Items
,887	16

Table 6. Validity of Auditory learning style

		Validitas
VAR00001	Pearson Correlation	,373
	Sig. (2-tailed)	,012
	N	45
VAR00002	Pearson Correlation	,465
	Sig. (2-tailed)	,001
	N	45
VAR00003	Pearson Correlation	,587*
	Sig. (2-tailed)	,000
	N	45
VAR00004	Pearson Correlation	,792
	Sig. (2-tailed)	,000
	N	45
VAR00005	Pearson Correlation	,524
	Sig. (2-tailed)	,000
	N	45
VAR00006	Pearson Correlation	,439
	Sig. (2-tailed)	,003
	N	45
VAR00007	Pearson Correlation	,677*
	Sig. (2-tailed)	,000

	N	45
	Pearson Correlation	,821**
VAR00008	Sig. (2-tailed)	,000
	N	45
	Pearson Correlation	,603**
VAR00009	Sig. (2-tailed)	,000
	N	45
	Pearson Correlation	,500*
VAR00010	Sig. (2-tailed)	,000
	N	45
	Pearson Correlation	,843*
VAR00011	Sig. (2-tailed)	,000
	N	45
	Pearson Correlation	,431
VAR00012	Sig. (2-tailed)	,003
	N	45
	Pearson Correlation	,798
VAR00013	Sig. (2-tailed)	,000
	N	45
	Pearson Correlation	,569
VAR00014	Sig. (2-tailed)	,000
	N	45
	Pearson Correlation	,608*
VAR00015	Sig. (2-tailed)	,000
	N	45
	Pearson Correlation	,642
VAR00016	Sig. (2-tailed)	,000
	N	45

c. Testing reliability and validity for kinesthetic learning style

Tabel 7. Reliability of kinesthetic learning style

Cronbach's Alpha	N of Items
,913	16

Table 8. Validity of Kinesthetic learning style

	Validitas
VAR00001	Pearson Correlation ,563
	Sig. (2-tailed) ,000

	N	45
	Pearson Correlation	,630
VAR00002	Sig. (2-tailed)	,000
	N	45
	Pearson Correlation	,726
VAR00003	Sig. (2-tailed)	,000
	N	45
	Pearson Correlation	,647
VAR00004	Sig. (2-tailed)	,000
	N	45
	Pearson Correlation	,558**
VAR00005	Sig. (2-tailed)	,000
	N	45
	Pearson Correlation	,630**
VAR00006	Sig. (2-tailed)	,000
	N	45
	Pearson Correlation	,630**
VAR00007	Sig. (2-tailed)	,000
	N	45
	Pearson Correlation	,412
VAR00008	Sig. (2-tailed)	,005
	N	45
	Pearson Correlation	,674
VAR00009	Sig. (2-tailed)	,000
	N	45
	Pearson Correlation	,529**
VAR00010	Sig. (2-tailed)	,000
	N	45
	Pearson Correlation	,839
VAR00011	Sig. (2-tailed)	,000
	N	45
	Pearson Correlation	,718
VAR00012	Sig. (2-tailed)	,000
	N	45
	Pearson Correlation	,747
VAR00013	Sig. (2-tailed)	,000
	N	45
	Pearson Correlation	,597
VAR00014	Sig. (2-tailed)	,000
	N	45
	Pearson Correlation	,839
VAR00015	Sig. (2-tailed)	,000
	N	45
	Pearson Correlation	,791
VAR00016	Sig. (2-tailed)	,000
	N	45

Conclusion

Research has completely examined on instrument of students learning styles questionnaire through content validity and construct validity test. A total of 54 questions items tested by respondents then analyzed by pearson correlation and alpha cronbach produced as many as 48 items of valid questions with high reliability. Furthermore the items of invalid questions are dropped so as not to interfere with data quality.

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