

Validity and reliability test in the questionnaire of javanese local wisdom knowledge aspect through the myth of beringin (*Ficus sp.*)

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Abstract. The aim of this paper is to determine validity and reliability of a questionnaire used to know the knowledge aspect of Javanese local wisdom on Beringin (*Ficus sp.*). 14 questionnaires were filled in by students were grade X students majoring in mathematics and natural sciences. The questionnaire consisted of 14 items knowledge aspect of Javanese local wisdom on Beringin. Parametric testing was performed as data were assumed to follow normal distribution. The questionnaire item validity of was examined through item-total correlation using Pearson's formula while its reliability was assessed with Cronbach's alpha formula. The result of validity testing showed 9 valid indicators while the result of reliability testing revealed Cronbach's alpha value of .823. This article is preliminary to know knowledge aspect of Javanese local wisdom on Beringin (*Ficus sp.*) in Adiwiyata school.

Keywords: local wisdom, knowledge aspect, *Ficus sp.*, questionnaire, validity, reliability

1. Introduction

One of the science learning outcomes is that students have an understanding of their environment. One way to increase the sensitivity of the environment by improving local wisdom [1]. Local wisdom is represented by all forms of belief, knowledge, habits, insight that lead the community in life [2]. Indonesian people especially Javanese has many local wisdoms. Local wisdom that is believed by Javanese in form of local wisdom of Beringin (*Ficus sp.*) [3].

Javanese consider the Beringin is a sacred place. The local wisdom taught about a water conservation [4]. Local wisdom can be implemented in Adiwiyata school or school-based environment learning materials. Local wisdom knowledge as a way to introduce conservation education as one of the requirements of Adiwiyata school. Adiwiyata program is a program by the Ministry of Environment and Forestry with the Ministry of Education and Culture to improve school citizen knowledge and awareness as an effort to preserve the environment [5].

Local knowledge means local wisdom that can be understood as a wise local idea, appreciated to be embedded and followed by society [6]. In the concept of anthropology, local wisdom is known as local wisdom or local knowledge or local genius that is the basis of cultural identity [7]. Questionnaire is used to know knowledge aspects profile of local wisdom through the myth of Beringin.



The main objective of using questionnaire in research is to obtain relevant information in most reliable and valid manner. The accuracy and consistency of survey/questionnaire forms a significant aspect of research methodology which are known as validity and reliability [8].

Validity and reliability are important ways when designing a questionnaire for research instrument. Validity means to feasibility, meaningfulness, correctness, and usefulness of an instrument or a procedure that it measures what should be measured. Reliability means to accuracy and consistency of respondents's answers over time. In every case, reliability is needed but insufficient requirement for validity. It means that a valid instrument must be reliable, but a reliable instrument does not need guarantee that it is a valid one [9]–[11]. This research use construct validity as one of validity types [12].

2. Research method

2.1. Location and Time

Research method using survey with quantitative description. This research was conducted at January to July 2019. The location of this research at MAN 2 Sleman in. Jl. Raya Tajem, Tajem, Maguwoharjo, Depok, Sleman. MAN 2 Sleman as Adiwiyata school based on the decision letter of Governor DIY number 196 year 2018.

2.2. Subject of Research

Sampling technique using Purposive Sampling Technique. Population is students of mathematics and natural sciences at MAN 2 Sleman. Samples are 32 students in class X MAN 2 Sleman.

2.3. Questionnaire

Questionnaire was used to know the knowledge aspect of Javanese local wisdom on Beringin (*Ficus* sp.). English items were translated into Indonesian. Questionnaire was adopted from journal and article.

The questionnaire distributed consisted of 14 items. It used Likert scales with range from agree, neutral, and disagree [13] (see table 1). The items were (1) Javanese do not consider Beringin as the dwelling place of ancestral spirits, (2) *Sesajen* (also known as offerings to the spirits of ancestor) are often given under the old and large Beringin because it is regarded as where magical powers converge, (3) There is no conservation meaning behind the sacred Beringin, (4) Beringin is a tree that lives near the source of water, (5) There is no prohibition to play at night around Beringin, (6) There is no prohibition to spaced out under Beringin, (7) Beringin is forbidden to be watered at night, (8) Javanese believe that *sesajen* that are placed around the Beringin are used as *penolak bala* (also known as avoid danger), (9) It is believed that if Beringin is cut down, the spirits of ancestor will be disturbed and angry, (10) Beringin has no efficacy in alternative medicine, (11) Javanese do special rituals or prayers around Beringin, (12) Javanese believes that child and menstruating women aren't be approached to Beringin (13) Beringin's wood has no high economic value, (14) Beringin is used as one of the prerequisites for closing in ritual ceremony.

Table 1. Questionnaire scale.

Option	Scoring	
	Positive	Negative
Agree/Frequently/Positive	3	1
Hesitating/sometimes/neutral/don't know	2	2
Disagree/almost never/negative	1	3

2.4 Item Validity and Reliability Testing of The Questionnaire

Construct validity and reliability were determined by analysis of 14 questionnaires with SPSS. The questionnaire's construct validity can be proven by using content analysis, factor analysis, multi-trait/multi method studies, and correlation coefficient study. Correlation was calculated with Pearson's correlation for data were assumed to be normally distributed (parametric testing was done). Validity of each indicator was determined from the significance of its correlation with the sum score (Item-total correlation) while reliability of the questionnaire was determined as an internal consistency and assessed with Cronbach's alpha formula.

Table 2. Item-total correlation.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Pearson	1	.081	.111	-.100	.629**	.659**	.308	.386*	.620**	.008	.450**	.116	.468**	.379*
Correlation														
item														
_2														
Sig. (2-tailed)		.661	.544	.586	.000	.000	.087	.029	.000	.964	.010	.528	.007	.032
N	32	32	32	32	32	32	32	32	32	32	32	32	32	32

Table 3. Item-total correlation.

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.768	.772	14
.823	.824	9

Table 4. Item-total correlation.

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
item_1	30.47	18.902	.647	.764	.725
item_2	30.19	22.738	.173	.503	.771
item_3	30.59	23.539	-.006	.517	.792
item_4	31.34	22.168	.141	.617	.783
item_5	30.59	19.475	.526	.684	.738
item_6	30.50	19.290	.627	.675	.728
item_7	30.59	21.539	.337	.687	.758
item_8	30.22	21.467	.518	.616	.747
item_9	30.28	21.305	.403	.707	.753
item_10	31.13	22.629	.184	.629	.771
item_11	30.34	20.684	.453	.533	.748
item_12	31.06	20.641	.448	.701	.748
item_13	31.03	21.257	.401	.594	.753
item_14	30.66	20.039	.616	.622	.733

2.5 Data Analysis

Analysis of the data obtain from the questionnaire by calculating the Likert scale data with descriptive statistical analysis. Data analysis is obtained by calculating the average answers of the result each answer from the respondents which then the data is converted into a percentage form. The following is formula for determining result's percentage from the respondent's questionnaire.

$$\% = \frac{n}{N} \times 100\%, \quad \% = \text{Percentage sought}; \quad n = \text{Value obtained}; \quad \text{and } N = \text{Number of all values}$$

Then the percentage that has been obtained is categorized: $\geq 76\%$ is good, $56\% - 75\%$ is medium, and $\leq 55\%$ is low/less.

3. Results and Discussion

The items were distributed to research subjects and the following results were obtained:

Table 5. Frequency distributions and corrected item-total correlations for 14 items.

No.	Items	Validity	Percentage		
			Yes	Don't know	No
1	Javanese do not consider Beringin as the dwelling place of ancestral spirits	valid	18.75%	9.38%	71.88%
2	<i>Sesajen</i> (also known as offerings to the spirits of ancestor) are often given under the old and large Beringin because it is regarded as where magical powers converge	not valid	90.63%	0.00%	9.38%
3	There is no conservation meaning behind the sacred Beringin	not valid	6.25%	37.50%	53.13%
4	Beringin is a tree that lives near the source of water	not valid	59.38%	15.63%	25.00%
5	There is no prohibition to play at night around Beringin	valid	21.88%	15.63%	62.50%
6	There is no prohibition to spaced out under Beringin	valid	15.63%	18.75%	65.63%
7	Beringin is forbidden to be watered at night	not valid	9.38%	40.63%	50.00%
8	Javanese believe that <i>sesajen</i> that are placed around the Beringin are used as <i>penolak bala</i> (also known as avoid danger)	valid	81.25%	15.63%	3.13%
9	It is believed that if Beringin is cut down, the spirits of ancestor will be disturbed and angry	valid	81.25%	9.38%	9.38%
10	Beringin has no efficacy in alternative medicine	not valid	12.50%	62.50%	25.00%
11	Javanese do special rituals or prayers around Beringin	valid	78.13%	9.38%	12.50%
12	Javanese believes that child and menstruating women aren't be approached to Beringin	valid	21.88%	50.00%	28.13%
13	Beringin's wood has no high economic value	valid	21.88%	59.38%	18.75%
14	Beringin is used as one of the prerequisites for closing in ritual ceremony	valid	43.75%	46.88%	9.38%

From this result can describe that:

- Statement of respondent use Likert Scale with range from 1 to 3, namely Yes, Don't know, and No.
- The number of positive (+) item/statement are 7 (3, 5, 11, 13, 15, 16, 18, 20)
- The number of negative (-) item/statement are 7 (2, 4, 7, 8, 9, 19)

The evidence of this preliminary survey shows that the group of 14 items can be used as internally consistent measuring instrument [14].

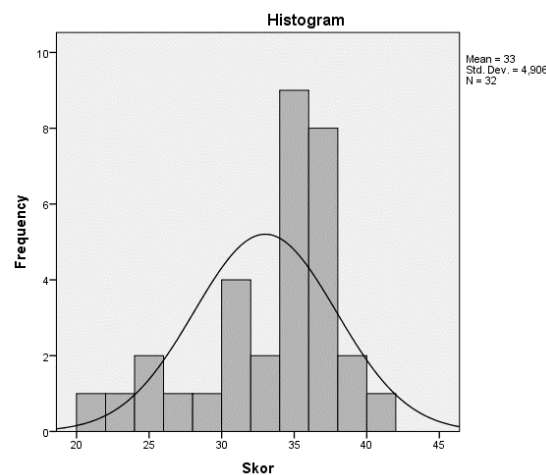


Figure 1. Histogram results of local wisdom knowledge aspect.

From figure 1, the average value is 33 for student's responses in Adiwiyata school to the questionnaire that measures local wisdom knowledge aspect through myth of *Ficus* sp. So, the average value is divided by the 14 items that used in the questionnaire, and 2.36 results were obtained. This shows local wisdom knowledge of students on the second scale. Then, with the same formula, a percentage of 78.57% is obtained where this result is included in the range of percentage $\geq 76\%$, which means it is in the medium category, thus indicating that local wisdom knowledge aspect of students in the myth of *Ficus* sp. is moderate.

Based on the result, local wisdom knowledge aspect of students MAN 2 Sleman in the myth of *Ficus* sp. is moderate. Students of MAN 2 Sleman as a modern Javanese must have a higher reasoning aspect than believing aspect [15]. It correlates with the purpose of implementation Curriculum of 2013 (K-13) to improve students reasoning skill [16]. The believing aspect in the item number 2, 8, 9, 11 is higher percentage. The reasoning aspect percentage is only high in item number 4. So, this questionnaire can be used to evaluate the implementation K-13 especially for knowledge aspect of Javanese local wisdom on Beringin (*Ficus* sp.) in Biology material.

4. Conclusion

The questionnaire's item validity testing showed 9 valid indicators from 14 indicators initially distributed. Invalid indicators exclusion showed significant higher Cronbach's alpha value. Cronbach's alpha value was .823 indicating that the questionnaire has high reliability (Cronbach's alpha $> .70$). Items of the questionnaire can be used for large scale and population to know the knowledge aspect of Javanese local wisdom on Beringin (*Ficus* sp.)

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