



VALIDATION OF ACTIVE LEARNING SCALE IN ELEMENTARY SCHOOL BASED ON THE INDONESIAN TEACHER PERCEPTION

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VALIDASI SKALA PEMBELAJARAN AKTIF DI SEKOLAH DASAR BERDASARKAN PERSEPSI GURU INDONESIA

ARTICLE HISTORY

Submitted:
24 Februari 2023
24th February 2023

Accepted:
10 April 2023
10th April 2023

Published:
27 April 2023
27th April 2023

ABSTRACT

Abstract: This paper discusses the validity and reliability of a measuring tool that reflects active learning in elementary schools, which is called the Active-Learning-in-Primary-School Scale (SPASD). The research was quantitative, which adheres to the idea of item-response-theory. The data used was secondary that was obtained from the Managing-Good-Practice-for-Basic-Education program, which was collected under the sponsorship of the European Commission based on five different provinces in Indonesia using a questionnaire developed under the coordination of UNICEF even though it has not been statistically validated. The sample of 1021 primary school teachers met the requirements for analysis. Exploratory and confirmatory factor analysis proves that there are several constructs. Seven valid dimensions were found namely training utilization, teaching planning, learning process, and evaluation, use of media, teacher professional satisfaction, and classroom climate. Some items were removed because they were not valid, even though all the hypothesized constructs remained valid and reliable. In conclusion, the tested scale was valid and reliable with a slight modification of the structure. It is recommended that the application of the constructs should be re-confirmed if it is applied in the context of different places, cultures, and school conditions.

Keywords: active learning, teacher perceptions, validation scale, elementary school, construct

Abstrak: Artikel ini membahas tentang validitas dan reliabilitas alat ukur yang mencerminkan pembelajaran aktif di sekolah dasar, yang disebut Skala-Pembelajaran-Aktif-di-Sekolah-Dasar (SPASD). Penelitian bersifat kuantitatif yang berpegang pada ide *item-response-theory*. Data yang digunakan bersifat sekunder, diperoleh dari program *Managing-Good-Practice-for-Basic-Education* yang terkumpul dibawah sponsor Komisi Eropa di lima provinsi berbeda di Indonesia dengan menggunakan kuesioner yang dikembangkan dibawah koordinasi UNICEF meskipun belum tervalidasi secara statistik. Sampel sebanyak 1021 guru sekolah dasar memenuhi persyaratan untuk analisis. Analisis faktor eksploratori dan konfirmatori membuktikan bahwa ada beberapa konstruk. Ditemukan tujuh dimensi valid yaitu pemanfaatan pelatihan, perencanaan mengajar, proses pembelajaran, dan evaluasi, penggunaan media, kepuasan profesional guru, dan iklim kelas. Beberapa item ditanggalkan karena tidak valid, walau semua konstruk yang dihipotesiskan tetap valid dan reliabel. Disimpulkan bahwa skala terbukti valid dan reliabel dengan sedikit modifikasi struktur. Direkomendasikan agar dikonfirmasi kembali penerapan konstruk jika hendak digunakan dalam konteks tempat, budaya, dan kondisi sekolah yang berbeda.

Kata Kunci: pembelajaran aktif, persepsi guru, sekolah dasar, skala validasi, konstruk

CITATION

Kaluge, L. & Yulianti. (2023). Validation of Active Learning Scale In Elementary School Based On The Indonesian Teacher Perception. *Primary: Jurnal Pendidikan Guru Sekolah Dasar*, 12 (2), 523-533. DOI: <http://dx.doi.org/10.33578/jpfkip.v12i2.9707>.

INTRODUCTION

Evidences show us that the quality of Indonesian education has been still not satisfactory when looking at the results of several international assessments such as PISA, TIMSS, and PIRLS where the achievement of Indonesian students remained in the bottom ten positions for the past two decades (Mufiroh & Listyorini, 2016; Septiana & Ibrohim, 2020; Yusuf & Lestari, 2015). Even though for about five decades various efforts to improve have been made starting from educational policies, curriculum changes, learning packages, learning media and various innovations, student achievement in general has not improved (Fenanlampir, Batlolona, & Imelda, 2019; Azkiyah, 2017; Pratiwiningtyas, Susilaningsih, & Sudana, 2017; Wong, 2019). It is suspected that in the learning process, children are less encouraged to develop thinking skills. The learning process in the classroom has been directed at the ability to memorize teaching materials, hoard various information without being required to understand it deeply, critically and also relate it to daily life (Anas & Munir, 2018; Hadi & Novaliyosi, 2019; Hartini, Misri, & Nursuprianah, 2018). As a result, when students graduate from school, they are theoretically smart, but less in application and little critical. Such symptoms are general matters of the learning process. The learning process is not directed to build and develop character and potential as well.

Several international publications presented their findings about education in Indonesia and questioned the importance of learning practices in schools (Maulana, Helms-Lorenz, Irnidayanti, & van-de-Grift, 2016; Maulana, Opdenakker, den-Brok, & Bosker, 2012; Azkiyah, Doolaard, Creemers, & van der Werf, 2012), although specifically related to learning methods and models, these researchers distinguished between conventional learning methods and other

learning methods, and found that conventional learning was still dominant in Indonesia. Conventional learning is learning that pays little attention to differences in students and is based solely on the wishes of the teacher so that ideal understanding was not obtained in learning so that the learning system was completely neglected. This proved the occurrence of failures in the learning process at school (Chang, 2018). The use of conventional learning could be seen from the lack of student activity during the teaching and learning process, students tended to be silent or even talk to themselves when the teacher delivered the material. As a result, their learning achievement was unsatisfactory as shown in the results of the PISA, PIRLS, and TIMSS assessments ahead (Hadi & Novaliyosi, 2019; Septiana & Ibrohim, 2020; Fenanlampir, Batlolona, & Imelda, 2019; Wong, 2019) Low competence Indonesian students because there was no meaningful learning process that was able to optimize aspects of student development so that their achievements were not optimal. Realizing this reality, educational experts tried to find and formulate strategies that could embrace all the differences that students had. The learning strategies offered including active learning (Ismail, 2016; Nurdyansyah & Toyiba, 2016). In addition, generally in research, learning activities were associated with student achievement, with the curriculum, and teacher teaching strategies.

The main problem of this research focused on testing standard measuring instruments. The measuring instrument or scale in question is the Active Learning Scale in Elementary Schools (SPASD = *skala-pembelajaran-aktif-sekolah-dasar*). Measuring instrument validation can be done qualitatively and quantitatively. Qualitatively, the statement items are considered by relevant experts. However, expert understanding is not necessarily confirmed by evidence in the field. Qualitative validation is meaningful as a first

step so that the concept makes sense but is not necessarily significant based on statistical data. Quantitatively, validation implies testing in terms of validity, reliability, and construct significance. Because until now there has limited valid tool to measure quantitatively learning activities in schools, the problem of this research addressed to the following questions. Were the constructs or learning factors from the perspective of teachers' perceptions, valid, meaningful, and reliable?

METHODS

The design of this study used the idea of item response theory (IRT) which has been developed so far. Active learning in schools perceived by teachers was raw data (observed variables) to separate latent variables which called constructs as meaningful umbrella dimensions. This theory begins by observing the description and relationship of items derived from data in the field. Construct validation commences with factor exploration followed by factor confirmation. In addition, the estimated reliability of each factor and the correlation between factors is calculated to ensure the accuracy of the extraction used. There were seven context factors that reflected learning in the classroom, namely the active instructional process, the benefits of teacher training, teaching plan, media use,

instructional evaluation, teacher professional satisfaction, and classroom climate.

The data for the study were of a secondary nature, which had been collected through the pilot of the Managing Good Practice for Basic Education (MGPBE) program under the coordination of Unicef, from several provinces sponsored by the European Union to mainstream basic education good practices. A modified Likert scale questionnaire with four choices (not-mostly-mostly-very useful) was prepared by the task force team, and was qualitatively validated (Binaja, Kaluge, Santosa, Purwoko, 2007). Because basic education in Indonesia includes elementary and junior high schools, after obtaining permission from the European Union office, the researchers sorted, using only elementary school data that had never been validated. The data for this study came from 5 provinces, namely West Nusatenggara, Southeast Nusatenggara, South Celebes, South Borneo, West Java. The total number of participating teachers was 1021 people whose details were in Table 1. It appeared that the data represented parts of Indonesia. These five provinces were selected as areas that are often used as sites for implementing basic education innovation trials through the government with the assistance of foreign donors as part of unique educational innovations over the last three decades.

Table 1. Sample Description

<i>Province</i>	<i>Frequency</i>	<i>%</i>	<i>% cumulative</i>
Southeast Nusatenggara	121	11.9	11.9
South Celebes	158	15.4	27.3
West Nusatenggara	255	25.0	52.3
West Java	289	28.3	78.6
South Borneo	198	19.4	100
Total	1021	100	

Data analysis began with descriptive statistics to determine the distribution of data in each item. In connection with the research questions, the researcher tested all the constructs using exploratory factor analysis

(EFA) which described the indicator points in the construct. Because the instrument was compiled based on pooling items that had not been tested quantitatively, it opened up opportunities for assessing the number of

constructs and grouping the items or indicators through EFA. The selected and facilitated EFA extraction in SPSS was Principal Axis Factoring (PAF) which was considered appropriate because it is more open to both orthogonal and oblique rotations, rather than Least Squares and Maximum Likelihood which are recommended best by some experts in this field. The criteria for the validity of the item content on each factor were ≥ 0.3 and communality < 0.95 in order to avoid obstacles in the Heywood case. Cronbach's alpha criterion was required in evaluating reliability if the construct, $\alpha < 0.4$, proposed by Nunnally and Bernstein (1994) should be discarded. In closing, a confirmatory factor analysis (ordinal data scale allows CFA from the Analysis of Moment Structure, AMOS) was performed. Due to the large sample exceeding 1000, the goodness of fit test of the CFA model has the potential to fail by using chi-square. This study chose the backup options GFI, TLI, AGFI, CFI, NFI and RMSEA as fitness benchmark. For loading (λ) each observed variable, the criterion ≤ 0.3 was declared significant.

RESULTS

The results of this study contained the presentation of item descriptions followed by a summary of exploratory factor analysis then ended up with confirmatory factoring and reliability testing. Regarding the construct, it

began with active learning and was followed by other dimensions which were contextual aspects of active learning, namely the training contract on learning for teachers, planning and evaluation of instruction, use of teaching media, teacher professional satisfaction, and classroom climate.

The first finding comes from descriptive analysis and EFA which produced seven dimensions as presented in Table 2. The contents in Table 2 were the mean, standard deviation, and the results of the exploratory factor analysis consisting of the communality coefficient (h^2) and factor loading (λ) for each indicator. The average and standard deviation of all items reflect a reasonable scatter. Communalities did not appear to be extreme, none higher than 0.9 and the factor loadings met the valid criteria. These were the reasons of the of the construct validities were accepted.

Originally there were seven dimensions with 47 indicators that were taken into account when compiling the instrument grid due to parts of the active learning context. The seven dimensions were training benefits, teaching plan, instructional process, use of teaching media, teacher professional satisfaction, instructional evaluation, and classroom atmosphere, each of which were also shown in Table 2.

Table 2. Description and Exploration of Constructs Related to Instruction

Indicator	Description		Exploratory Factor	
	Average	Standard Deviation	comunality (h^2)	Loading (λ)
Training benefit				
(no3a) Improving subject-matter knowledge	3.68	.537	.496	.704
(no3b) Developing teaching-learning facilities	3.58	.566	.493	.702
(no3c) Improving teaching techniques	3.61	.573	.580	.762
(no3d) Improving methods of pupil assessment	3.56	.603	.602	.776
(no3e) Improving classroom management skills	3.62	.623	.664	.215 ^{*)}
(no3f) Developing counseling skills	3.40	.709	.601	.175 ^{*)}
(no3g) Exhanging ideas with other teachers	3.65	.591	.549	.241 ^{*)}
(no3h) Discussing administrative matters	3.50	.691	.619	.787
Teaching Plan				

(no6a) Detailed lesson plan on activities and outcomes	3.50	.695	.368	.606
(no6b) Distributing syllabi to pupils	2.40	1.076	.481	.694
(no6c) Preparing models to be used in lessons	2.41	.868	.509	.713
(no6d) Using outsiders in lesson planning	1.92	.813	.439	.662
Instructional Process				
(no7a) Engaging in discussion during the class	3.32	.705	.630	.794
(no7b) Engaging in group task activities	3.30	.722	.659	.812
(no7c) Engaging in observation and experiments	2.80	.875	.577	.760
(no7d) Engaging in pupils' presentation	3.12	.780	.455	.675
Instructional Evaluation				
(no9a) Checking degree of pupil understanding	3.51	.628	.362	.602
(no9b) Using test choices for pupil achievement	3.01	.732	.298	.546
(no9c) Using valuation rubric, report, and daily journals	2.94	.777	.557	.746
(no9d) Evaluating oral presentation of pupils	2.88	.751	.512	.715
(no9e) Checking for measuring pupil attitudes and behavior	2.45	.899	.432	.657
Media Use				
(no8c) Using black/white boards for teaching	3.42	.729	.252	.484
(no8d) Books for teaching the main subject	2.61	.789	.383	.626
(no8e) Using exercise book	2.29	.944	.385	.633
(no8f) Library books as main texts	2.67	.915	.505	.698
(no8g) Maps/globe for teaching	2.32	.808	.395	.633
(no8i) Models/skeletons to teach related subject	1.20	.544	.257	.239 [*]
(no8j) Photos/pictures for teaching	1.64	.775	.226	.235 [*]
(no8k) Using computer and laboratories in teaching	1.34	.671	.236	.225 [*]
Teacher Professional Satisfaction				
(no7e) Prefer teaching than other profession	3.59	.582	.158	.189 [*]
(no7f) Liking to this school than other places	2.74	.745	.199	.572
(no7g) Being satisfied to perform as a teacher	3.40	.674	.342	.584
(no7h) Satisfaction with pupil attainment	3.21	.700	.310	.599
(no7i) Being satisfied with pupil attitudes	3.59	.582	.359	.468
(no7j) Satisfaction with co-workers professional abilities	2.636	.8061	.192	.149 [*]
(no7k) Happy with the school supports	2.510	.8788	.321	.156 [*]
(no7l) Happy with the government support	2.757	.9012	.311	.175 [*]
(no7m) Happy with sufficient reward of teaching profession	2.493	.8253	.438	.177 [*]
(no7n) Happy with school regulations	1.636	.7606	.349	.168 [*]
(no7o) Feel being trusted by pupils	1.338	.6569	.259	.189 [*]
(no7p) Being trusted by pupil parents	1.345	.6555	.196	.130 [*]
Classroom Climate				
12a) Involving pupils in setting the classroom rules	3.73	.522	.362	.602
12b) Feeling free to speak between pupil and teacher	3.18	.858	.484	.696
12c) Allowing pupil to develop own ideas	3.20	.755	.580	.761
12d) Quick coping up the misbehavior problems	3.46	.653	.519	.720
12e) Solving the environmental disturbances	3.40	.737	.341	.584

Note: *) not valid item

The dimension of training benefits contained three items with loadings lower than

the valid criteria so that they were. These three items were 3e, 3f, 3g which related to

classroom management and counseling behavior and collaboration between teachers but did not support teaching activities.

It appears that the eight items reflecting the teacher's professional satisfaction still had loadings higher than the established criteria (0.3). Therefore the teacher's professional satisfaction was valid and included for the arrangement as a unitary construct. The four items referred to (7f, 7g,

7h, 7i) generally blended things that were extrinsic and outside the teacher him/herself.

The four dimensions were still intact with complete indicators developed namely teaching plan, instructional processes, instructional evaluations, and classroom climate. All the indicators used clearly characterize the construct in question so that it was no longer doubtful in concept and reality.

Tabel 3. Intercorrelation Matrix of Constructs

	Training benefit	Teaching plan	Instructional Process	Professional satisfaction	Media use	Instructional evaluation	Classroom climate
Training benefit	1.000						
Teaching plan	.297	1.000					
Instructional process	.308	.467	1.000				
Professional satisfaction	.288	.432	.525	1.000			
Media use	.243	.440	.538	.439	1.000		
Instructional evaluation	.344	.487	.482	.465	.488	1.000	
Classroom climate	.261	.332	.381	.408	.346	.382	1.000

Note: All $p < 0.05$ (2-tailed)

Intercorrelation coefficients between dimensions or factors, ranged between small to medium ($r = 0.261$ to 0.538) all proved to be significant ($p = 0.01$), so that the use of PAF extraction was appropriate.

The second finding comes from CFA analysis and construct reliability. All valid items were tested by CFA of moment structure analysis (AMOS). CFA results, presented in Table 5, illustrated all indicators and dimensions were confirmed as a valid model. Likewise, the learning dimension was confirmed through CFA analysis and goodness-of-fit index. With a sample size that had been estimated about the mismatch of the model using the value χ^2 it turned out to be

proven. However, there was other opportunity to use RMSEA, CFI, AGFI, TLI and GFI to ensure CFA model fit; if one of the coefficients met the requirements then the CFA model shall be declared appropriate and valid. Table 4 presented the results of the suitability test. It turned out that χ^2 and NFI did not while the other indices met the fitness requirements of the model. Turning to the content (λ) and uniqueness (u^2) of each indicator, all were valid and reasonable in Table 5. The reliability of all constructs (with a value range of $\alpha = 0.639$ to 0.818) met the criteria of being reliable.

Table 4. Testing Goodness of Fit

	Calculated value	Criteria	Decision
χ^2	p = 0.000	p > .05	Not fit
GFI	0.929	≥ 0.90	Fit
TLI	0.902	≥ 0.95	Fit
AGFI	0.915	≥ 0.90	Fit
CFI	0.913	≥ 0.90	Fit
NFI	0.872	≥ 0.90	Not fit
RMSEA	0.042	≤ 0.90	Fit

Table 5. Confirmation of Seven Factors

Indicator	Factor loading (λ)	Uniqueness (u^2)	Cronbach's alpha (α)
Training benefit			0.818
(no3a) Improving subject-matter knowledge	0,618	0.496	
(no3b) Developing teaching-learning facilities	0,704	0.493	
(no3c) Improving teaching techniques	0,793	0.580	
(no3d) Improving methods of pupil assessment	0,762	0.602	
Teaching Plan			0.639
(no6a) Detailed lesson plan on activities and outcomes	0,542	0.368	
(no6b) Distributing syllabi to pupils	0,580	0.481	
(no6c) Preparing models to be used in lessons	0,531	0.509	
(no6d) Using outsiders in lesson planning	0,708	0.439	
Instructional Process			0.766
(no7a) Engaging in discussion during the class	0,746	0.630	
(no7b) Engaging in group task activities	0,684	0.659	
(no7c) Engaging in observation and experiments	0,574	0.577	
(no7d) Engaging in pupils' presentation	0,389	0.455	
Instructional Evaluation			0.700
(no9a) Checking degree of pupil understanding	0,492	0.362	
(no9b) Using test choices for pupil achievement	0,493	0.298	
(no9c) Using valuation rubric, report, and daily journals	0,614	0.557	
(no9d) Evaluating oral presentation of pupils	0,556	0.512	
(no9e) Checking for measuring pupil attitudes and behavior	0,531	0.432	
Media Use			0.662
(no8c) Using black/white boards for teaching	0,388	0.252	
(no8d) Books for teaching the main subject	0,589	0.383	
(no8e) Using exercise book	0,557	0.385	
(no8f) Library books as main texts	0,598	0.505	
(no8g) Maps/globe for teaching	0,499	0.395	
Teacher Professional Satisfaction			0.699
(no7f) Liking to this school than other places	0,499	0.199	
(no7g) Being satisfied to perform as a teacher	0,681	0.342	
(no7h) Satisfaction with pupil attainment	0,647	0.310	
(no7i) Being satisfied with pupil attitudes	0,484	0.359	
Classroom Climate			0.724

12a) Involving pupils in setting the classroom rules	0,484	0.362
12b) Feeling free to speak between pupil and teacher	0,549	0.484
(12c) Allowing pupil to develop own ideas	0,625	0.580
(12d) Quick coping up the misbehavior problems	0,616	0.519
(12e) Solving the environmental disturbances	0,480	0.341

DISCUSSION

All of the findings turned out to be valid and reliable even though accompanied by the unemployment of a number of indicators, this still needs to be discussed further. This study aimed to test the validity and reliability of standardizing an active learning measurement tool called SPASD in the context of primary schools in Indonesia. The research results revealed that this scale as a whole was good in terms of validity and reliability. This result confirmed the previous idea which was adapted when the initial drafting allegedly described the context of primary schools in Indonesia by and large. The loading findings from the factor analysis showed that all the active learning constructs proved valid. Other contracts could be valid with the exception of some invalid items which must be released.

First, the Benefits of Training in the learning process. It turned out that three items were dropped because they were not obtained the benefits, while the other four items kept valid with a high level of reliability. The benefits of teacher training which were found to be valid have been sparked in previous research which alluded to how useless training was as a capacity building effort for teachers to increase their knowledge, develop their teaching abilities, improve assessment methods, and improve classroom management skills (Floress, Beschta, Meyer, & Reinke, 2017; Kimber, Skoog, & Sandelf, 2013).

Second, the Teaching Plan. Data analysis found that the four statement items designed from the beginning remained valid and reliable. Detailed learning preparations were useful in creating ideal environmental conditions for an active and effective teaching process (Cintia, 2018; Konopka, Adaime, Mosele, 2015; Muyasaroh, 2019).

Third, the Active Learning Process. The five active learning items were found to be valid and confirmed to be significant with adequate reliability estimates. The description of the learning process described in these findings paralleled the findings of several studies regarding descriptions of interactions in the classroom that involved many students (Arianti, 2017; Konopka, 2015; Lindacher, 2020). Overall, the results of experience in interaction, experimentation, and observation with their environment (Saputra & Suhito, 2015; Maulana, Opdenaker, den Brok, & Bosker, 2011; Teodorović, 2011), teachers were expected to be able to choose appropriate learning strategies and methods.

Fourth, Media Use. The findings revealed that three items were not significant, the other 5 items were confirmed and reliable. The findings in this construct were well covered in the following overview of the study. Using media sources was essential in order to optimize satisfying learning outcomes (Nurdyansyah & Toyiba, 2016; Widyaningsih & Rosidi, 2015). Active learning basically strengthened the stimuli and responses of students in learning, so it didn't become boring for them. The basic idea was that students gained understanding in learning through their interactions with their environment, and that students were involved in constructing their knowledge.

Fifth, Learning Evaluation. The findings on this dimension proved that the five items were valid and remain confirmed reliable. The description of learning evaluation was indeed as part of teacher's habits at the final stage of learning in the form of checking the level of understanding of students at the end of teaching, using a checklist to measure attitudes and behavior (Teodorović, 2011).

Sixth, Teacher Professional Satisfaction. Teachers worked professionally when they satisfied with what they were actively doing. Not all the eight items expressed such kind of satisfaction, only four remained valid and reliable. In accordance with the findings of Konopka, et al (2015), Ismail (2016), Muiyasaroh (2019) that satisfaction reflected students because they felt teachers were fair and honest with students, students were happier with their schools, students were satisfied with lessons at school and the school taught them useful skills for life. Students felt at home with other colleagues and they learnt more than at other schools.

Seventh, Classroom Climate. The state of the psychological atmosphere of the classroom was planned from the start and remains valid, as well as confirmed and reliable. Classroom climate based on teacher perceptions that set high expectations for student achievement, student participation in decision-making about class rules, freedom of speech between students and teachers about personal issues, learning issues, and group interests, and generating student motivation in developing new ideas and concerns (Muyasaroh, 2019).

CONCLUSION

From the findings of this study, it was concluded that SPASD was a valid and reliable scale after going through a filtering process through both exploratory and confirmatory factor analysis and reliability testing. This SPASD had the same seven factor structure from the start with changes in indicators. The so-called constructs were learning process factors, training benefits, teaching plans, media use, instructional evaluation, professional satisfaction, and classroom climate. The reliability of the seven factors ranged from medium to high. These findings suggested that this tested scale can be used with caution for primary school teachers in Indonesia. The seven dimensions by observing the reliability index at the usual threshold position indicated

caution for application in different educational environments. Such sorts of environment have a unique context in terms of culture, location, and systemic level.

ACKNOWLEDMENT

We would like to thank the European Union Delegation to Indonesia and Brunei Darussalam for granting permission to use the data in this study. Thanks also to the PGRI University of Kanjuruhan in Malang, which through funds (DIPA) allowed this article to be worked on and published.

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