

Is ISSAL Reliable in Measuring Teaching Learning Quality in Indonesia Higher Education?

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Abstract—Indonesian Higher Education’s efforts in responding to the global challenges move very scrupulous. Several regulations were established to make sure that the changes and improvement of the quality can be attained. The needs of measurement to appraise the quality of teaching learning in swift and reliable approach is perceived. Accreditation used to be one of the approach in evaluate university’s performance, including teaching and learning process. Nevertheless, the result is not prompt and brief yet less specific on the daily process. Student evaluation also used to be held by the university, but mostly they are not reliable due to the students concern on the evaluation were not thoughtful. Indonesian Survey of Student Active Learning (ISSAL) was adopted from National Survey of Student Engagement (NSSE) that is common in US higher education institution in evaluating teaching learning process. ISSAL composed of very universal dimensions on teaching learning. This study seeks some evidence whether the dimensions of ISSAL can be reliably apply in Indonesia.

Keywords—ISSLA; NSSE; teaching-learning; reliability; factor analysis

I. INTRODUCTION

In order to improve the quality of teaching learning process, Ministry of Research Technology and Higher Education enacted National Standard for Higher Education which is consist of eight standards. This study focused on teaching learning and learning assessment standard, of which demands higher education institution to comply eight teaching learning principles, which are (1) interactive; (2) holistic; (3) integrative; (4) scientific; (5) contextual; (6) thematic; (7) effective and (8) collaborative and based on Student Centered Learning (SCL). This regulation requires Higher Education Institution (HEI) to conduct two ways teaching learning process instead of using teacher centered. This transformation requires students to be more active in their learning process.

Despite the government regulation, the need to encounter global challenges also requires teaching learning process in HEI to conceive qualified graduates. One of the primary factor to improve the quality of teaching learning process is student engagement. Jones conveyed that student engagements have a very close relationship with student motivation and commitment to learn, and also to develop themselves in extending self-regulated [1]. Engagement refers to the intensity of behavior and the emotional quality of individual who

intentionally partaking in performing the task. It consists of multidimensional aspect, so that in consequences, engagement instruments should consider all of those aspects involved [2].

In this conceptual understanding, student engagement considers as the efforts and time which are devoted by the students in their learning process. Student engagement in this conventional concept involves student’s active engagement which is composed of learning activities, such as reading and writing, learning preparation before classroom and also student-faculty interaction [3]. In correspondence to Kuh, Coates also affirmed that student active engagement can be defined largely as student’s experience in academic and non-academic aspects, which is consist of (a) active in collaborative learning; (b) participating in challenging academic activities; (c) formal communication with academic staff; (d) active in enriching the educational experiences; and (e) supportive campus environment [4].

II. LITERATURE RIVIEW

A. National Student Engagement Survey (NSSE)

The issue of student engagement has been expeditiously evolved in United States since 2000, and cultivated a great deal of research projects. Up to years 2014, there has been about 2 million students come from about 800 HEI in US, participated to the survey held by *National Survey of Student Engagement* (NSSE). Through the long experiences, NSSE has validated and standardized the instrument in the very sophisticated way. NSSE has created a universal instrument to expose student engagement internationally [5]. By developing standardized instrument, hopefully study can be equivalent for all the participant countries. Using four dimensions of student engagement, which are (1) Academic Challenges, that is contained of four sub dimensions: (a) Higher order Learning; (b) Reflective and Integrative learning; (c) Learning strategies; and (d) Quantitative Reasoning; (2) Learning with peers, which is contained of two sub dimensions: (a) Collaborative learning and (b) Discussion with Diverse others; (3) Experience with faculty, which is contained of two sub dimensions: (a) student-faculty interaction and (b) Effective teaching practices, and (4) Campus environment, which is contained of also two dimensions, which are (a) Quality of Interaction and (b) Supportive Environment. Later, Kuh et al added one dimension which is believed that the demand considerable time and effort

of learning is not only happens in the classroom, but also outside of the classroom. As result, Kuh et al proposed High Impact Practices (HIPs) to be added in the NSSE instrument [6].

In response to the above explanations, NSSE was developed using multidimensional construct which integrating the student's feeling and actions. To measure student engagement, study has to take into account all of the dimensions, nevertheless each dimension can even still persevere solitarily [2]. Therefore, in measuring the reliability and validity of the instrument should be considered in multidimensional construct.

B. Indonesian Survey of Student Active Learning (ISSAL)

US higher education institution in evaluating teaching learning process. ISSAL composed of very universal dimensions on teaching learning, since it was derived from NSSE. ISSAL was developed in order to appraise on how teaching learning process has been performed in Indonesian HEI. Accreditation used to be one of the approach in evaluate university's performance, including teaching and learning process. Nevertheless, the result is not prompt and brief yet less specific on the daily process. Student evaluation also used to be held by the university, but mostly they are not reliable due to the students concern on the evaluation were not thoughtful. Since it was compulsory evaluation, most of the students complete it without deep considerations. When the study programs or higher education manager would like to use the result to compose educational policy, it can be misleading.

ISSAL was firstly developed in 2012, in conjunction between Higher Education Leadership and Management (HELM) by USAID and Directorate General Higher Education (DIKTI). ISSAL was first piloting in 2013 using three different model of HEI in Indonesia, which are (1) Hasanuddin University Makassar, representing State University; (2) Malang Muhammadiyah University, representing private university and (3) Medan State Polytechnics, representing Vocational Institution. Survey was performed in face-to-face offline methods. After piloting project, in 2015, ISSAL was continued in more intensive survey. By inviting some experts from NSSE, survey was developed thoroughly. In 2015, an expert on developing construct and item adaptation from NSSE was appointed to guide ISSAL construction. Followed by the attendance of the expert on data analysis and reporting, still from NSSE and lastly, additional expert on NSSE management also come to guide the survey team.

Towards the end, ISSAL was developed by adapted NSSE items, and even standardize to the NSSE codebook. One of the challenging is that some of the learning activities are not meant to be corresponded universally. There are some Indonesian context and culture plays in the learning activities. Therefore, there should be a study that can find and scrutinize which of the following dimensions, items and factors are not equal to Indonesian students.

C. Is ISSAL Reliable for Indonesian Context?

Since the development of NSSE as the main source of ISSAL construct is universal in nature, reliability test should be

carried out. Is the finding in US students can be applied to Indonesia? It is usually indicated to the different results when the participants and situations are varying. The assumption stated that if the diversity is not too immense, ISSAL can be still reliable for Indonesian context. Reliability can be considered as dependability or consistency. It suggests that the same thing is repeated or recurs under the identical or very similar conditions. The opposite of reliability is a measurement that yields erratic, unstable, or inconsistent results [7].

There are at least four ways to improve reliability, which are (1) by conceptualizing the construct clearly; (2) by using the correct level of measurement; (3) by using indicators of each variable; and (4) by using pilot test/pretest [7]. Another way to improve reliability is by selecting the item based on the construct [8]. Furthermore, preparing the item clearly can also affect the reliability of the instrument. Test administration, more or less also influences instrument reliability. ISSAL in this matters will be administrated using online methods. Online test sometimes exposes students to misinformation that can influence subsequent thinking about the content, consequently will also affecting reliability. Interaction between subject and researcher is very limited in online survey, can also cause to the minimal understanding and inquiry about the items.

Since ISSAL just as NSSE is constructed in multidimensional instrument, thereby study should perform two different reliability test. One test based on every dimension, and the other is composite reliability that is the integration of all sub scales and dimensions. Both are very important to do, since the composite reliability can be used to assure the instrument overall. Composite coefficient reliability is obtained by combining all of the true score variances and co-variances in all indicator variables related to constructs, and by dividing this sum by the total variance in the composite. This study used coefficient reliability composite by Mosier model [9]. The equation (1) shows about Mosier Composite Reliability, which is as follows:

$$r_{xx}^1 = 1 - \frac{(\sum w_j^2 s_j^2) - (\sum w_j^2 s_j^2 r_{jj})}{(\sum w_j^2 s_j^2) + 2(\sum w_j w_k s_j s_k r_{jk})} \quad (1)$$

where:

w_j^2 = weighted dimension j
 r_{jj} = reliability dimension j
 r_{jk} = correlation dimension j and k
 s_j^2 = variance dimension j

Accordingly, this study used 2 different type of reliability to perceive if ISSAL can be used dependably in Indonesia to reveal student's learning activities.

III. RESEARCH METHOD

A. Research Design

This study used both quantitative and qualitative approach. Survey, was held at the beginning of the study and analyzed the data in quantitative manner, using SPSS to analyze the reliability and also performed factor analyze. Focused Group Discussion (FGD) to two different groups (UGM students group) and (non UGM students) followed by In-depth

Cognitive Interview was held afterward. The result of FGD and In-depth Cognitive Interview then analyzed using qualitative approach, more in content analyses.

B. Population and Subject

Since ISSAL will be used spread over Indonesia, so that the population should also representing university in Indonesia. There were four universities involved in the survey, which are: (1) Universitas Pendidikan Indonesia; (2) Universitas Sebelas Maret Surakarta; (3) Universitas Syiah Kuala, Aceh dan Universitas Islam Negeri Sunan Ampel, Surabaya. Subjects of this study were 2004 students, come from those four universities.

C. Research Instrument

ISSAL was used to measure student learning activities based on the four dimensions of NSSE and 10 sub-dimensions, as well as one dimension namely High Impact Practices (HIPs). Table 1 below expose on the ISSAL dimension.

TABLE I. ISSAL INSTRUMENT INDICATORS AND SUB INDICATORS

Indicators	Sub indicators
Academic Challenges	Higher Order Learning
	Reflective and Integrative Learning
	Quantitative Reasoning
	Learning Strategies
Learning with Peers	Collaborative Learning
	Discussion with Diverse Others
Experiences with Faculty	Student Faculty Interaction
	Effective Teaching Practices
Campus Environment	Quality of Interaction
	Supportive Environment

ISSAL presented in online survey, by sending an e-mail containing the online survey to almost 200.000 students to be participant. About 10% from the target population, responded and participated in the survey. The survey can be finished in about 15 minutes.

D. Data Analyzes

Data was analyzed using Reliability in Scale analysis using Cronbach Alpha and factor analysis Principle Component Analysis. Beside, since the instrument is multidimensional in natures, so composite reliability analysis using Moiser model is also been done. In the qualitative side, also involve a content analysis in dealing with FGD and interview results [9].

IV. RESULTS AND DISCUSSION

A. Result

About 2004 students were involved in this research. The reliability coefficient of each sub scale can be seen in table 2. This table also presents the reliability coefficient of NSSE drawn in 2016 by NSSE team. Most of the ISSAL reliability coefficient are above 0.800, except sub dimension Learning Strategies which is only 0.760. Reliability coefficient describe on how the relationship between the score of the scale by using original empirical scores. Therefore, when we have reliability coefficient below 0.800, means that the variation represents

80% comes from the original subject score, and 20% comes from the variety of error in measurement.

If we take a look at the lowest reliability coefficient, which was happened in the sub scale Learning Strategies, means that the items of this sub scale is either too rarely occurred or in the other way around, is too often to be occurred in the context of teaching learning in Indonesia. Meanwhile in US, the Cronbach Alpha was very sophisticated for scale Learning Strategies (0.906).

Beside examined every dimension reliability coefficient, research also analyzed the composite reliability using Moiser model [9]. The result of the composite reliability is 0.991, which is very sophisticated in measuring the student's learning activities. Composite reliability coefficient indicates that all sub dimensions of ISSAL can work together in order to measure student learning activities.

TABLE II. COEFFICIENT RELIABILITY OF ISSAL AND NSSE IN EVERY DIMENSIONS

Dimensions	Coefficient reliability	
	NSSE Cronbach's Alpha	ISSAL Cronbach's Alpha
Higher Order Learning (HO)	.850	.825
Reflective and Integrative Learning (RI)	.870	.852
Learning Strategies (LS)	.760	.906
Quantitative Reasoning (QR)	.840	.930
Collaborative Learning (CL)	.820	.778
Discussion with Diverse Others (DD)	.880	.916
Student Faculties Interaction (SF)	.830	.817
Effective Teaching Practices (ETP)	.840	.958
Quality of Interaction (QI)	.850	.964
Supportive Environment (SE)	.890	.971
High Impact Practices (HIPs)	-	.906

*Result of NSSE based on 130.735 first year students from 512 HEIs in US taken in 2016

*Result of ISSAL based on 2.004 students from 4 HEIs in Indonesia taken in 2016

Lastly, the study also performed factor analyzes to discover the uniqueness of Indonesian learning activities dimension. The factor analyzes is corresponded to the national standard of teaching learning process mandated by the Ministry of Research, Technology and Higher Education. The result of the factor analyzes using PCA shows in table 3.

TABLE III. FACTOR ANALYSES RESULT RELATED TO THE NATIONAL TEACHING LEARNING STANDARD

Factors	Standard of Teaching and Learning Process
FACTOR 1	Student Centered Learning
FACTOR 2	Integrative
FACTOR 3	Holistic , Educative Assessment
FACTOR 4	Contextual
FACTOR 5	Interactive
FACTOR 6	Thematic, Authentic Assessment.
FACTOR 7	Collaborative
FACTOR 8	Scientific
FACTOR 9	Arts and Cultures

From table 3 found that ISSAL is also related to the Higher Education National Standard released by the Indonesian Ministry of Research, Technology and Higher Education affair by means of Permenristekdikti No. 44/2015 on National Standard of Higher Education. In section 11 and 22 of the decree is stated about the principles of teaching-learning process and assessment, which is correlated with the dimension of ISSAL (Table no. 3). Due to this finding, ISSAL can be used suggestively to reveal on how Higher Education Institution in Indonesia perform their teaching-learning and assessment process based on the National Standard mentioned by the ministry decree.

B. Discussion

One of the example of the items in Learning Strategies dimension is identified key information from reading assignments. In the Indonesian teaching and learning context, these activities are rarely happening. Students hardly come to the class by preparing themselves reading and pointing out the key information the night of day before. Moreover, the lectures also rarely give an assignment that can push the student to read and make a note. Summarizing and reviewing the material that have been taught also very infrequent to be done by the university students. Learning strategies is one of the aspect that give different picture of learning activities between Indonesia and US.

Teachers in Indonesia's universities are frequently using method of lecturing, discourse and speech. In consequences, students do not get used to be actively learning. The situation, nowadays is shifting, but has not happened throughout Indonesia. Likewise, the government try to push the changes by generating new regulation that on teaching and learning standard.

Principally, most of the dimension and sub dimension of ISSAL were proven to be properly use to measure students' teaching learning activities. And last of all, based on the factor analyzes also found that the items of ISSAL has corresponded to the principle of National Standard for Teaching and Learning Process. Some aspect related to arts, cultures and exhibitions, hardly be found in Indonesian context.

V. CONCLUSION

The present study showed and proved that ISSAL is reliable to the context of Indonesian teaching learning. Universities in Indonesia can utilize ISSAL to be a brief and comprehend appraisal of teaching and learning process. Furthermore, ISSAL items was proven also to be corresponded to the National Standard of Teaching Learning Process and assessments principles stated in Ministry of Research Technology and Higher Education Regulation no 44 year 2015. Whenever university want to examine the teaching and learning process whether it has been complying with the ministry regulation, the university can use ISSAL to be the instrument.

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