IJPHS: International Journal of Psychology and Health Science
GREENATION PUBLISHER
+62 812 1046 7572 http://greenpub.org greenation.info@gmail.com
DOI: https://doi.org/10.38035/ijphs.v4i2.2207
https://creativecommons.org/licenses/by/4.0/
Received: 21 June 2026 | **Revised:** 09 July 2026 | **Accepted:** 12 July 2026

Adaptation of the University Student Engagement Inventory (USEI) Scale for Students Taking Online Lectures

Nabila Triputri Aldelya[1], Farah Aulia[2]
[1]Faculty of Psychology and Health, Universitas Negeri Padang, Indonesia, nabilaaldelya@student.unp.ac.id
[2]Faculty of Psychology and Health, Universitas Negeri Padang, Indonesia, farahaulia@fip.unp.ac.id

Corresponding Author: nabilaaldelya@student.unp.ac.id[1]

Abstract: This study aims to adapt and test the validity and reliability of the University Student Engagement Inventory (USEI) measuring instrument by João Maroco (2016) into the context of Indonesian students who take online lectures. This measuring instrument consists of 15 statement items expressed into 3 dimensions, which are 5 emotional engagement items, 5 behavioral engagement items and 5 cognitive engagement items. The adaptation process was carried out through translation and adjustment to the cultural context and the Indonesian education system. The research subjects were 174 students who took online learning. The data were analyzed using descriptive statistics, reliability tests with Cronbach's Alpha analysis, and confirmatory factors (Confirmatory Factor Analysis/CFA). The results showed that the scale had fairly good internal reliability ($\alpha = 0.738$). The three-factor CFA model showed very good balance (CFI = 0.984, TLI = 0.981, RMSEA = 0.0202). Three items were found to be statistically invalid and were removed from the final version of the scale. The final version of the Scale consists of 12 items described in three main dimensions and demonstrates adequate validity and reliability.

Keywords: Adaptation, Online Learning, Student Engagement, Undergraduate.

INTRODUCTION

In recent years, technology has developed rapidly, impacting many aspects of life, including education. With these technological advancements, students can study while working full-time, taking care of their families, and engaging in other social activities (Lu, 2020). Furthermore, technology has become a practical tool for facilitating the teaching and learning process and enhancing students' experiences and knowledge (Hisham et al., 2021). Consequently, the term "online learning" (e-learning) has emerged, where teachers and students rely more heavily on the internet to search for information, generate ideas for teaching

materials, and complete assignments.through various digital platforms, both synchronously (real-time) and asynchronously (recordings).

In the context of higher education, student engagement is a crucial element influencing the effectiveness of the learning process, both in face-to-face and online learning (Mohd Nasir et al., 2020). Student engagement reflects the extent to which students are actively engaged cognitively, emotionally, and behaviorally in meaningful and academically purposeful learning activities. High levels of engagement have been shown to positively correlate with student learning satisfaction, retention, and academic success (Bickle et al., 2019).

However, various studies show that online learning has its own challenges that can lead to decreased student engagement. The lack of direct interaction between students and lecturers and peers, limited emotional support, and technical challenges often lead to students feeling isolated and less motivated to participate in online learning (Wester et al., 2021). Therefore, it is crucial to accurately measure student engagement so that educational institutions can identify problems and develop relevant intervention strategies.

One of the instruments widely used internationally to measure student engagement is the University Student Engagement Inventory (USEI) developed byMaroco et al., (2016) and Prananto, (2025).This instrument measures three main dimensions of engagement: behavioral engagement, emotional engagement, and cognitive engagement. The scale's validity and reliability have been tested in various countries, demonstrating that the USEI is a comprehensive measurement tool for identifying students' levels of multidimensional engagement. However, to date, there has been no adaptation of the USEI instrument to the context of online lectures, particularly in Indonesia. Adapting measurement instruments that take into account language, educational context, and population characteristics is crucial to ensure the accuracy and relevance of measurement results (Beaton et al., 2000). Without a measurement tool that has been tested as valid and reliable in a local context, efforts to evaluate and improve student engagement in online learning will be less than optimal.

Therefore, this study aims to conduct a cultural adaptation and psychometric testing of the University Student Engagement Inventory (USEI) instrument in the context of Indonesian students participating in online learning. Through this research, it is hoped that a valid and reliable measurement tool can be obtained to holistically assess student engagement in digital learning environments, which can ultimately be used by educators, higher education practitioners, and researchers in designing strategies to improve the quality of online learning in Indonesia.

METHOD

The research method used in this study is non-experimental quantitative research. The sampling technique used is non-probability sampling, where each member of the population does not have an equal chance of being selected as a sample. In this study, the number of research subjects was 174 students taking online lectures. The data collection process was conducted through the Google Forms platform. The data collection process in this study aimed to adapt the scale and test the validity and reliability of the Indonesian version of the USEI scale. The construct validity and reliability of the indicators forming the latent construct were evaluated using Confirmatory Factor Analysis (CFA), where CFA was conducted to test the construct validity and reliability of the construct as a whole.

In this study, researchers adapted the University Student Engagement Inventory (USEI) developed by João Maroco in 2014 to measure student engagement among students taking online courses. This instrument consists of 15 items grouped into three dimensions: 5 emotional engagement items, 5 behavioral engagement items, and 5 cognitive engagement items. The scoring system used is to add up the scores for each dimension separately because the construct

studied in this study is unidimensional. The following is a blueprint for the Student Engagement Inventory (USEI):

Table 1. Blueprint Student Engagement Inventory (USEI)

No	Dimensions	Number of Items
1	Behavioral Engagement	5
2	Emotional Engagement	5
3	Cognitive Engagement	5
	TOTAL	15

The process of adapting the Student Engagement Inventory (USEI) scale was carried out in several stages. In the first stage, the researcher translated the original language measurement tool into Indonesian, in which case the researcher carried out the process of he translation was carried out with the assistance of a research colleague from the English Department and a translator who specializes in psychology. The translations from the two translators were then synthesized into a single scale version. The synthesized scale was then back-translated by an English language professional. The back-translation results were then tested for suitability and clarity with the original measurement instrument by two experts. This stage was carried out to test the content validity of the translated scale (Expert Judgment). After obtaining the results of the expert judgment, the researcher piloted the scale on three students to assess its feasibility, suitability to the online lecture context, and language use. After that, the researcher made final revisions to ensure that the scale met the eligibility standards and participant characteristics.

RESULTS AND DISCUSSION

This study aims to adapt and test the validity and reliability of the University Student Engagement Inventory (USEI) measurement tool in the context of Indonesian students attending online lectures. This measurement tool consists of three main dimensions, namely Behavioral Engagement, Emotional Engagement, and Cognitive Engagement, where each dimension consists of five items. Based on descriptive analysis, the mean item score ranges from 2.93 to 3.21, with a standard deviation between 0.97 and 1.34. This indicates that in general, respondents gave answers in the moderate to quite high category on the student engagement scale. Next, a reliability test of the University Student Engagement Inventory (USEI) scale was conducted. The following table shows the results of the reliability test of the University Student Engagement Inventory (USEI) scale.

Table 2. Reliability Statistics

	Mean	Elementary School	Cronbach'sα
scale	3.09	0.540	0.738

Table 3. Item Reliability Statistics

Item	Mean	Elementary School	If item dropped Cronbach'sα
A	2.93	0.978	0.759
B	3.01	1,078	0.751
C	3.04	1,042	0.744
D	3.01	1,019	0.736
E	3.21	1,034	0.730
F	3.13	1,076	0.728
G	3.06	1,074	0.723
H	3.21	1,147	0.721
I	3.16	1,090	0.707
J	3.09	1,195	0.704
K	3.03	1,186	0.703
L	3.14	1,260	0.704
M	3.08	1,285	0.697

N	3.12	1,348	0.696
O	3.14	1,255	0.731

Based on the test results table above, the results obtained are that the Cronbach's valueα, a scale of 0.738, which is in the fairly good category (Azwar, 2012). This means that the University Student Engagement Inventory (USEI) scale is reliable enough for use. Further analysis shows that removing several items such as items A, B, or C can increase the scale's reliability to 0.75 or above. This means that the scale's internal consistency can be improved if several initial items are revised.

Furthermore, based on the CFA test results, the three-factor structure of the University Student Engagement Inventory (USEI) measurement instrument was found to be acceptable and consistent with the empirical data. This means that the three-dimensional structure of the USEI scale (Behavioral Engagement, Emotional Engagement, and Cognitive Engagement) meets the criteria for good construct validity. The CFI (0.984) and TLI (0.981) values indicate an almost excellent model fit. In addition, the RMSEA value of 0.020 indicates minimal approximation error. These results are in line with previous research conducted by Maroco et al. (2016), which also found a three-factor structure in the USEI instrument. The following table shows the results of the goodness-of-fit index test for the scale.

Table 4. Model fit statistics summary

CFI	TLI	RMSEA	RMSEA 90% CI	
			Lower	Upper
0.984	0.981	0.0202	0.00	0.0478

Next, the results of the loading factor from EFA can be seen in the following table:

Table 5. Factor Loading CFA

Factor		Estimate	SE	Z	p
Factor 1	A	0.599	0.0976	6.14	<.001
	B	0.406	0.0865	4.69	<.001
	C	0.625	0.0761	8.21	<.001
	D	0.309	0.0817	3.78	<.001
	E	0.164	0.0872	1.89	0.059
Factor 2	F	0.360	0.0854	5.18	<.001
	G	0.432	0.0839	4.860	<.001
	H	0.439	0.0904	4.860	<.001
	I	0.650	0.0811	8.01	<.001
	J	1.734	1.3265	1.31	0.191
Factor 3	K	0.778	0.0985	9.311	<.001
	L	0.802	0.0947	8.600	<.001
	M	0.813	0.0931	8.63	<.001
	N	0.920	0.0864	8.97	<.001
	O	-0.983	11.3356	-0.74	0.462

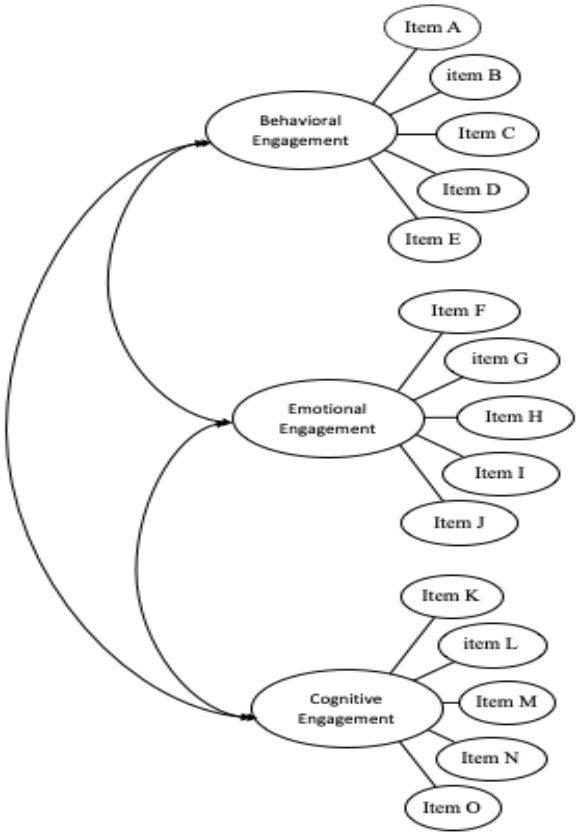

Figure 1. 3-Factor CFA Results

Based on the table above, in the Behavioral Engagement dimension, four of the five items showed significant factor loadings ($p < 0.001$), with Item C having the highest contribution ($\lambda = 0.625$). However, Item E showed a low loading ($\lambda = 0.164$) and was not statistically significant ($p = 0.059$). These results indicate that the behavior of submitting assignments on time may be less sensitive in measuring behavioral engagement in the context of online lectures in Indonesia, or may be influenced by external factors such as the flexibility of submission times in online learning. In addition, for Item D with a loading value of $\lambda = 0.309$, item revisions need to be made to maintain it.

Furthermore, the Emotional Engagement dimension generally shows good consistency, with Item I having the highest loading ($\lambda = 0.650$). However, Item J shows a very high factor loading ($\lambda = 1.734$) with a large standard error (SE = 1.326). This Heywood case phenomenon may be caused by multicollinearity with other items or very small error variance. These results are consistent with the findings of the USEI adaptation study in Malaysia by Lim et al. (2019) who also reported the same problem in items measuring positive emotions. In addition, item F with a loading value of $\lambda = 0.360$ can be maintained and needs to be revised.

In the Cognitive Engagement dimension, the results showed very strong internal consistency with factor loadings of four items (K to N) having values above 0.77 and significant at $p < 0.001$. However, Item O showed an unusual pattern with a negative loading ($\lambda = -0.983$) which was not significant ($p = 0.462$). After rechecking, it was found that this might be caused by errors in the reverse coding process or inaccurate translation which caused respondents' confusion in filling out the item.

Table 6. Final Results of the CFA Scale of the University Student Engagement Inventory (USEI) Indonesian Version

Dimensions		Item	Factor Loading
Behavioral Engagement	A	I pay attention to the lecturer's explanation during the online lecture.	0.599
	B	I follow the rules set by the campus or lecturer during online lectures.	0.406
	C	I usually submit my college assignments on time.	0.625
	D	When I don't understand the material, I ask questions or join in discussions in the online lecture forum.	0.309
Emotional Engagement	F	I feel like I have less accomplishment during online lectures	0.36
	G	I feel enthusiastic about doing my college assignments	0.432
	H	I enjoy taking online lectures	0.439
	I	I am interested in the material presented in the lecture	0.65
	K	When reading material, I question my understanding to make sure I understand.	0.778
Cognitive Engagement	L	I discuss lecture material with people outside campus	0.802
	M	If I don't understand the meaning of a term, I try to find out, for example by opening a dictionary or asking someone else.	0.813
	N	I try to use the knowledge I gain to solve new problems.	0.92

Based on the results of the CFA analysis, it was found that the cognitive engagement dimension was the strongest factor in this model, with all items in this dimension showing high and significant factor loadings. This indicates that students who take online lectures tend to remain cognitively engaged, such as trying to understand the material, integrate knowledge, and solve academic problems. Meanwhile, the emotional engagement dimension also showed fairly stable results, although one item (J) needs to be reviewed. The behavioral engagement dimension was relatively weaker, this could occur because this dimension reflects challenges in observing learning behavior in an online context, such as attendance or active participation.

Several invalid items, such as item O, had a negative and insignificant loading factor, which provides an important indication that not all items from the original version can be directly applied in the Indonesian context without in-depth adaptation. Possible causes include differences in cultural context, differences in online learning experiences, and inappropriate language interpretation. This is in line with Beaton et al. (2000), who emphasized that cross-cultural adaptation requires a systematic validation process, including item revision or elimination. These three items were indicated as items that needed to be revised or removed from the final version of the scale because they did not demonstrate a valid contribution to the construct.

Considering the reliability, validity, and model fit results, it can be said that this adapted scale is suitable for assessing student engagement in online learning. Although some items were removed, the general three-dimensional structure remains relevant and consistent with previously developed student engagement theories. In the context of online learning, these findings have several important implications. First, the three-dimensional structure of the USEI remains relevant but requires item modification to adapt to the specific characteristics of online learning. Second, some items related to specific behaviors (such as timely assignment submission) and emotional expression may need to be adapted to Indonesian academic and

cultural norms. Third, these findings support the argument (Fredricks et al., 2016) that measuring student engagement requires consideration of the specific learning context.

CONCLUSION

Based on the statistical analysis and discussion above, it can be concluded that the adapted version of the University Student Engagement Inventory (USEI) demonstrates adequate construct validity and internal reliability. The three-factor model, consisting of behavioral engagement, emotional engagement, and cognitive engagement, is statistically acceptable and aligns with the underlying theory. Several invalid items, namely items E, J, and O, were removed, as they did not contribute significantly to the construct. Despite the removal of several invalid items, the final 12-item scale still comprehensively reflects student engagement in online learning. Therefore, this scale can be used as a valid and reliable measurement tool in research within the context of online learning.

REFERENCES

Beaton, Dorcas E., Bombardier, Claire., Guillemin, Francis., Ferraz, and Marcos Bosi. (2000). Guidelines for the Process of Cross-Cultural Adaptation of Self-Report Measures. Spine 25(24), 3186-3191,

Bickle, MC Rucker, RD and Burnsed KA, Online learning: Examination of attributes that promote student satisfaction, (2019). Online Journal of Distance Learning Administration, vol. XXII, no. 1, Spring

Fredricks, J. A., Filsecker, M., & Lawson, M. A. (2016). Student engagement, context, and adjustment: Addressing definitional, measurement, and methodological issues. In Learning and Instruction (Vol. 43, pp. 1–4). Elsevier Ltd.https://doi.org/10.1016/j.learninstruc.2016.02.002

Hisham, ANM, Sailun, AS, & Mohamed, S. (2021). Student Engagement Levels In Online Learning: The New Normal. Selangor Humanities Review, 4(1).

Lim, YM, Arop, MN, & Nawang, WM (2019). Psychometric properties of University Student Engagement Inventory (USEI) among Malaysian students. Journal of Educational and Social Research, 9(4), 145-154.https://doi.org/10.2478/jesr-2019-0056

Lu, H. (2020). Online Learning: The Meanings of Student Engagement. Education Journal, 9(3), 73.https://doi.org/10.11648/j.edu.20200903.13

Maroco, J., Maroco, A.L., Bonini Campos, J.A.D., & Fredricks, J.A. (2016). University student's engagement: Development of the University Student Engagement Inventory (USEI). Psicologia: Reflexao e Critica, 29(1).https://doi.org/10.1186/s41155-016-0042-8

Mohd Nasir, M., Janikowski, T., Guyker, W., & Chia, C. (2020). Modifying The Student Course Engagement Questionnaire for Use with Online Courses. Journal of Educators Online. Retrieved fromhttps://files.eric.ed.gov/fulltext/EJ1241583.pdf.

Prananto, K. (2025). Psychometric Testing of the Indonesian Version of the University Student Engagement Inventory (USEI) Scale: Validity and Reliability in Indonesian Students. Humanitas, 9(1), 41–56.

Wester, E.R., Walsh, L.L., Arango-Caro, S., & Callis-Duehl, K.L. (2021). Student engagement declines in STEM undergraduates during COVID19–driven remote learning. Journal of microbiology & biology education, 22(1), ev22i1-2385. https://jour nals.asm.org/doi/abs/10.1128/jmbe.v22i1.2385

Ziadat, A.H. (2021). The impact of using VAKT strategy on oral reading and reading comprehension skills of elementary students with dyslexia. International Journal of Learning, Teaching and Educational Research, 20(2), 121–136.https://doi.org/10.26803/ijlter.20.2.7