

The Development of Student Engagement Scale in Vocational High School Students

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Abstract: This study aims to develop a student engagement scale by testing the validity and reliability of the measuring instrument so that it can measure the level of student engagement. Student engagement is a factor that determines student success in academic terms, including behavioral, cognitive, and emotional involvement. The research method used is quantitative research. Data collection using convenience sampling obtained 315 students at SMK Pawiyatan Surabaya. Data analysis used validity and reliability tests, including confirmatory factor analysis (CFA). The results showed a Cronbach's Alpha value of 0.888, consisting of 34 items. In addition, CFA analysis using a GFI value of 0.960 and an RMSEA of 0.072 showed that the student engagement scale had high validity. However, the CFI value of 0.716 indicates that the student engagement measurement tool is not sufficiently reliable, requiring improvement so that the student engagement scale can be used optimally.

1 INTRODUCTION

Vocational High School is a form of secondary education that is a three-year education program after junior high school. Government Regulation No. 29 of 1991 states that secondary education programs prioritize the development of students abilities and the implementation of certain types of work, where students are encouraged to excel and become independent individuals (Mustika & Kusdiyati, 2015). Adolescence is a transitional period from childhood to adulthood. One of the tasks in adolescent development is to develop intellectual skills (Hurlock, 1997). Adolescents are educated in school to learn and receive education, so the benefits can be determined by how well students understand and deepen their learning process.

Student Engagement is involvement in learning that can be seen through the behavior, cognition, and emotions displayed by students at school (Fredricks et al., 2004; Junianto et al., 2021). A student can be said to have high student engagement if they are active in the learning process, show interest in the subjects being studied, are enthusiastic about learning, have critical thinking and problem-solving skills, and are actively involved in the process of deepening their understanding of the subject matter (Akmal et al., 2022). External factors that drive student engagement can include the school environment, assignments, relationships with friends and teachers, and parental support. In addition, having motivation and learning goals are also internal factors that can encourage student engagement in the

learning process (Fredricks et al., 2004 ; Junianto et al., 2021).

There are three aspects of *student engagement*, such as *behavioral engagement*, *cognitive engagement*, and *emotional engagement*. *Behavioral engagement* can be seen from behaviors such as obeying rules, studying diligently, not behaving negatively, and being actively involved in academic, social, and extracurricular activities (Fredricks & McColskey, 2012; Pramisyayanti & Khoirunnisa, 2022). *Cognitive engagement* includes a thoughtful, strategic attitude and a willingness to make an effort to understand complex or difficult material (Corno & Mandinach, 1983; Li et al., 2020). *Emotional engagement* includes interest, a sense of belonging to the school, and appreciation or recognition of success in school activities (Voelkl, 1997; Martin et al., 2020).

Based on data from Badan Pusat Statistik (BPS), in 2023 the total number of vocational school students in Indonesia was around 5,059,603 million people, with 2.4 million of them attending public vocational schools and 2.6 million attending private vocational schools. Based on a report from PUSPRESNAS, the number of high-achieving students reached 114,781 people in 2024. These students are assessed based on their achievements in research and innovation, arts and culture, and sports, from every level of education, starting from elementary school, junior high school, senior high school, vocational high school, vocational college, and higher education. As reported by the Kemendikbudristek, in the 32nd National Vocational High School Student Competency Competition (LKS SMK) XXXII in 2024, East Java province ranked

first by winning 15 gold medals, 10 silver medals, and 4 bronze medals. This indicates that vocational high school students have an interest and enthusiasm for both learning and the programs implemented by their schools, which is a characteristic of students with high engagement (Akmal et al., 2022).

Research focusing on vocational education backgrounds is just as important as high school or Islamic high school education, because vocational high school students not only learn through theory, but also prepare skills that are relevant to the needs of the world of work. The Regulation of the Minister of National Education (Permendiknas) Number 22 of year 2006 states that Vocational Education aims to improve the intelligence, knowledge, personality, noble character, and skills of students to live independently and pursue further education in accordance with their vocational program (Putri et al., 2023).

It is important for every student to be actively engaged in learning at school. Research on student engagement is essential because students with good student engagement can have a positive impact on learning outcomes, reduce dropout rates, and prevent students from engaging in juvenile delinquency (Junianto et al., 2021). The purpose of this study is to develop and test the validity and reliability of a student engagement scale for vocational high school students to ensure that the measurement tool used can measure student engagement, so that it can be optimally applied in vocational education in Indonesia.

2 METHOD

Participant

The population used in this study was students of SMK Pawiyatan Surabaya. The criteria for participants used as a reference for sampling were 1) active students of SMK Pawiyatan Surabaya, and 2) aged 14-18 years. Sampling was carried out using the convenience method to obtain accurate respondents, namely participants who were easily accessible and met the criteria. The questionnaire was distributed at SMK Pawiyatan Surabaya to 315 participants. With a large and heterogeneous number of respondents, it is hoped that this will produce good statistical calculations.

Table 1. Demographic Data of Research Participants

Demographic Data		Number
Gender	Female	202 (64.4%)
	Male	113 (35.9%)
	Total	315 (100%)
Age	14 years	3 (1%)
	15 years	6 (1.9%)
	16 years	92 (29.2%)
	17 years	154 (48.9%)
	18 years	60 (19%)
	Total	315 (100%)

Research Design

This study uses a non-experimental quantitative research method with the aim of testing and developing a measuring instrument, namely a

student engagement scale. *Student engagement* is defined as student involvement in terms of behavior, emotions, and cognition in both academic and non-academic learning activities. This research instrument was developed based on Fredericks (2004) theory of *student engagement*, which consists of *behavioral engagement*, *cognitive engagement*, and *emotional engagement*. In this study, the items consisted of 102 statements covering all aspects of student engagement and used a Likert scale with a range of answer options from 1 to 4, namely 1 Very Disagree (VD), 2 Disagree (D), 3 Agree (A), and 4 Very Agree (VA).

Procedure

Data collection from respondents was conducted on May 28, 2024, by distributing questionnaires via Google Forms to students at SMK Pawiyatan Surabaya. The researcher used a measurement tool developed based on Fredericks' (2004) theory of *student engagement*. The questionnaire link was distributed to 13 classes ranging from grades X, XI, and XII, and data was obtained from 315 respondents in one day. The research informed consent form was given to the school administrator.

Item Analysis Technique

In order to obtain a good measuring instrument, it is necessary to conduct validity and reliability tests to determine the reliability or consistency of the measuring instrument. This reliability test can also be used as a tool to estimate the variation of errors in a measurement, which shows that the greater the measurement error, the lower the reliability coefficient of the measuring

instrument (Moningka & Selviana, 2020). The validity test on the measurement items was conducted by the lecturer in charge of developing psychological measurement tools, and the readability test was conducted by 8 expert judgments to determine whether the content of the items could be easily understood before being distributed to participants in accordance with the research objectives.

The data obtained from the questionnaire distribution was then analyzed to determine the validity and reliability of the Student Engagement scale that had been developed. In testing reliability, the researchers used the Cronbach's Alpha calculation method with a minimum reliability threshold of 7 . However, for initial testing of the measurement tool, a reliability coefficient ranging from .6 to .7 is still acceptable. The next test was a validity test using Confirmatory Factor Analysis (CFA) to see the suitability of the items with the indicators. The CFA test is useful for ensuring that a structure or construct is in accordance with the measurement model used (Moningka & Selviana, 2020). The criteria for a suitable model fit are based on the opinion of Hu and Bentler (1999), namely Comparative Fit Index (CFI) $\geq .95$, Goodness of Fit Index (GFI) $\geq .90$, and Root Mean Square Error of Approximation (RMSEA) $\leq .08$.

3 RESULT

Item Analysis

The results of data analysis using Cronbach's Alpha test obtained a reliability coefficient value of 0.888 (M = 105.0825; SD = 12.47390) for 34 items on the *Student Engagement* scale. One item was eliminated, namely item number 25 (the school environment provides full support to its students to develop) because it had a corrected item-total correlation value below 2.5. However, this test instrument was still considered reliable because the Cronbach's Alpha coefficient was above 0.70. Meanwhile, the range of corrected item-total correlation coefficients for these 34 statements ranged from 0.223 to 0.529.

Factor Analysis

Based on the results of the analysis of the scale items using Confirmatory Factor Analysis (CFA), the items that passed the analysis are listed in the following table.

Table 2. CFA Test Results

Aspect	No.	Item	Std. Est. (all)
BEHAVIORAL ENGAGEMENT	1	I obey the rules set in class	0.395

Aspect	No.	Item	Std. Est. (all)	
	2	Classroom rules make me feel comfortable to be active in learning activities.	0.381	
	3	I focus on the material being taught and do not disturb my classmates.	0.493	
	4	I often make noise during class	0.427	
	5	I feel reluctant to discuss learning materials	0.391	
	6	In my opinion, actively asking questions about the learning material is not necessary.	0.421	
	7	I often avoid activities organized by the school.	0.490	
	8	I don't like participating in school sports activities.	0.419	
	9	I feel annoyed when a friend reminds me of my homework to the teacher.	0.495	
	10	I always try to complete my assignments to the best of my ability.	0.491	
	11	Classroom learning makes me bored.	0.586	
	12	I feel burdened by school activities.	0.591	
COGNITIVE ENGAGEMENT	BEHAVIORAL	1	In receiving lesson material, I have to focus in order to understand it.	0.572
		2	If I study diligently, I will get good grades.	0.582

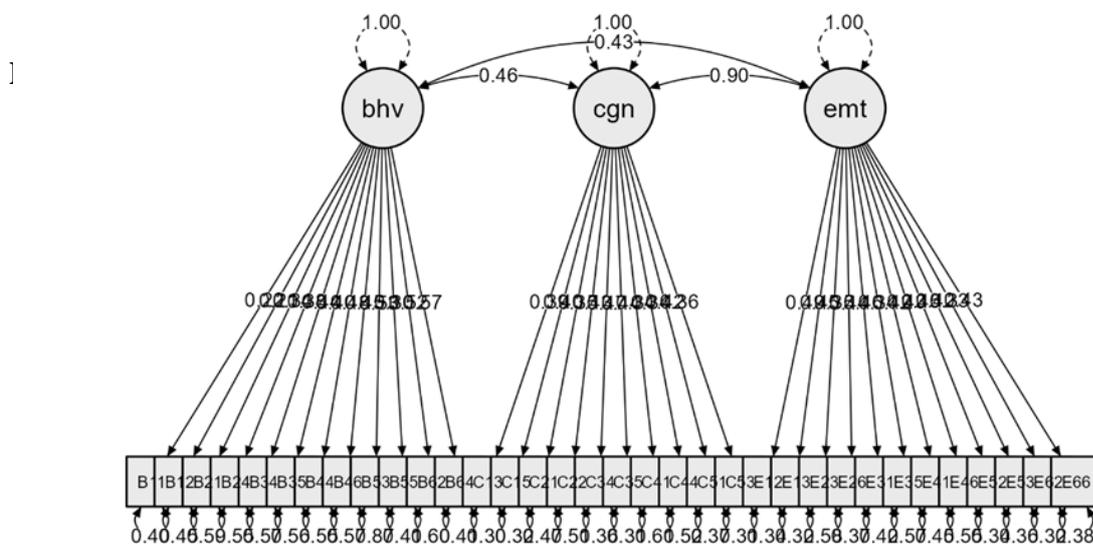
Aspect	No.	Item	Std. Est. (all)
	3	I want to ask about material that I find difficult to understand.	0.444
	4	I take the time to review the material I learned in school.	0.514
	5	I continue to study when my grades are not perfect.	0.604
	6	In difficult learning situations, I try to understand them.	0.596
	7	I can manage my time well.	0.400
	8	When I experience failure, I think it is the beginning of success.	0.404
	9	I have set future achievement targets	0.577
	10	I have the desire and intention to carry out what has been targeted	0.541
EMOTIONAL ENGAGEMENT	1	I am motivated in learning activities.	0.629
	2	I am interested in learning and participating in school activities.	0.593
	3	The school environment provides full support for students to develop	0.388
	4	I feel that school activities can build my character to be better	0.582
	5	I ask my teacher or other students if there is material that I do not understand.	0.555
	6	I feel comfortable expressing my opinion in class	0.450
	7	My family supports my learning process	0.575

Aspect	No.	Item	Std. Est. (all)
	8	I am confident that I can succeed in my education because of my family's support.	0.557
	9	I am confident that I will succeed in my schoolwork.	0.623
	10	I develop the skills I have	0.595
	11	I have plans for the future	0.525
	12	I feel that my future goals are more organized when I have prepared for them	0.558

The CFA test table above shows that 34 items passed. Each item with a Std. Est score higher than 0.3 was categorized based on its dimension. With a GFI value of 0.960, the CFA results show that the measurement of *student engagement* is acceptable. Therefore, this test instrument is considered reliable and valid because the GFI value

obtained is greater than 0.90 and the RMSEA value obtained is less than 0.08. However, the CFI value obtained is considered insufficiently reliable because it is less than 0.90, namely 0.716.

Picture 1. Results of the CFA Test for the Student Engagement Scale



measuring Student Engagement. In addition, the *Goodness of Fit Index* (GFI) value of 0.960 indicates that the student engagement scale has a fairly high validity. *The Root Mean Square of Approximation* (RMSEA) of 0.072 indicates that this value supports the validity of the student engagement scale that was developed. However, the *Comparative Fit Index* (CFI) of 0.716 indicates that the student engagement measurement tool is not yet fully reliable.

The validity and reliability of the *student engagement* variable have been studied several times. In a study conducted by Junianto et al. (2020), the student engagement variable was tested and proven to have a reliability score of 0.835, with behavioral engagement as the most dominant component. Although in this study the CFI reliability score was 0.716, which was not sufficiently reliable, testing through GFI showed a sufficiently reliable result of 0.960. This is in line with the research by Lam et al. (2014), namely that the test results for the *student engagement* variable showed a reliability score of 0.78.

Several valid and reliable items were obtained through validity and reliability tests of *student engagement* variables that

had been conducted. The item statements made by the researcher were deemed capable of reflecting the variable of student engagement. The items that can represent the *student engagement* variable are found in codes B11, B12, B21, B24, B34, B35, B44, B46, B53, B55, B62, B64, C13, C15, C21, C22, C34, C35, C41, C44, C51, C53, E12, E13, E23, E26, E31, E35, E41, E46, E52, E53, E62, E66, namely 34 items from 102 statements, the rest of which were discarded or unable to represent *student engagement*. The results of this study, demonstrated by data analysis using Confirmatory Factor Analysis (CFA), indicate that all components tested are sufficiently valid and reliable to represent the variables used.

This study has several limitations that should be considered for future research. The first limitation is that the researcher only used one vocational school in Surabaya, so the development of the scale for vocational education was not comprehensive and appeared biased. The researcher also realized that the respondents filled out the questionnaire in only one day, which took a long time to complete 102 items and visit 13 classes. This resulted in respondents completing the questionnaire without focus, rushing through it, and

answering as best they could. Therefore, it would be better if the measurement tool was designed as simply as possible and reflected the variable of student engagement well in order to save time.

4 CONCLUSIONS

Based on the results of the validity and reliability analysis conducted to measure the student engagement scale, it can be said that this scale can be considered for general use. Of the 102 items tested, 34 items were found to be valid and sufficiently reliable. However, there are several things that still need to be improved so that this measuring instrument can be declared consistent in distinguishing individuals with high or low student engagement. This is because the CFI value requires further testing to ensure that this student engagement scale can be used optimally. Therefore, it is recommended that researchers use measurement tools based on Frederick's theory, as they have been proven to have good validity and reliability.

5 REFERENCES

- Akmal, M., Lubis, L., & Haris, A. (2022). Hubungan Dukungan Sosial dan Self Efficacy Dengan Keterlibatan Siswa Pada SMK Swasta YPT Pangkalan Susu Kabupaten Langkat. *Jurnal Sains Sosio Humaniora*, 6(1), 1042–1066. <https://doi.org/10.22437/jssh.v6i1.21649>
- Amirah Ansyar, Dian Novita Siswanti, & Nur Akmal. (2023). Hubungan antara Self-Efficacy dengan Student Engagement pada Siswa MAN Pinrang. *PESHUM: Jurnal Pendidikan, Sosial Dan Humaniora*, 2(5), 835–845. <https://doi.org/10.56799/peshum.v2i5.2202>
- Birch, S. H., & Ladd, G. W. (1997). The teacher-child relationship and children's early school adjustment. *Journal of School Psychology*, 35(1), 61–79. [https://doi.org/10.1016/S0022-4405\(96\)00029-5](https://doi.org/10.1016/S0022-4405(96)00029-5)
- Connell, J. P., & Wellborn, J. G. (1991). Needs: Competence, Autonomy and Relatedness. *The Minnesota Symposia on Child Psychology*.
- Corno, L., & Mandinach, E. B. (1983). The Role Of Cognitive Engagement in Classroom Learning and Motivation. *Educational Psychologist*, 18(2), 88–108. <https://doi.org/10.1080/00461528309529266>
- Finn, J. D., Pannozzo, G. M., & Voelkl, K. E. (1995). Disruptive and Inattentive-Withdrawn Behavior and Achievement among Fourth Graders. *The Elementary School Journal*, 95(5), 421–434. <https://doi.org/10.1086/461853>
- Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School Engagement Potential of The Concept. *Review of Educational Research*, 74(1), 59–109.
- Fredricks, J. A., & McColskey, W. (2012). Handbook of Research on Student Engagement. *Handbook of Research on Student Engagement*, 1–840. <https://doi.org/10.1007/978-1-4614-2018-7>
- Ginting, D. (2021). Student Engagement and Factors Affecting Active Learning in English Language Teaching. *VELES Voices of English Language Education Society*, 5(2), 215–228. <https://doi.org/10.29408/veles.v5i2.3968>
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Hurlock, E. (1997). Psikologi Perkembangan: Suatu Pendekatan Sepanjang Rentang Kehidupan. *Psikologi Perkembangan*.
- Junianto, M., Bashori, K., & Hidayah, N. (2020). Validitas dan Reliabilitas Skala Student Engagement. *Jurnal RAP (Riset Aktual Psikologi Universitas Negeri*

- Padang), 11(2), 139. <https://doi.org/10.24036/rapun.v11i2.109771>
- Junianto, M., Bashori, K., & Hidayah, N. (2021). Gambaran Student Engagement pada Siswa SMA (Studi Kasus pada Siswa MAN 1 Magelang). *Insight : Jurnal Pemikiran Dan Penelitian Psikologi*, 17(1), 47–57. <https://doi.org/10.32528/ins.v17i1.3615>
- Kahu, E. R., & Nelson, K. (2017). Student engagement in the educational interface: understanding the mechanisms of student success Student engagement in the educational interface: *Higher Education Research & Development*, 0(0), 1–14. <https://doi.org/10.1080/07294360.2017.1344197>
- Komussudin, A. (2021). Hubungan Student Engagement dengan Prestasi Akademik Mahasiswa STIT At-Taqwa Ciparay Bandung, 2(2), 73–81.
- Kusumapatriwi, C. P. K., & Meilinda, P. (2024). Studi Deskriptif School Engagement pada Siswa SMK “X” di Kota Bandung. *Jipsi*, 6(1), 62–70. <https://doi.org/10.37278/jipsi.v6i1.846>
- Lam, S., Wong, B. P. H., Negovan, V., Stanculescu, E., Duck, R., Nelson, B., ... Earrell, P. (2014). Understanding and measuring student engagement in school: The results of an international study from 12 countries. *School Psychology Quarterly*, 29(2), 213–232.
- Li, S., Zheng, J., & Lajoie, S. P. (2020). The relationship between cognitive engagement and students’ performance in a simulation-based training environment: an information-processing perspective. *Interactive Learning Environments*, 0(0), 1–14. <https://doi.org/10.1080/10494820.2020.1848879>
- Martin, A. J., Sperling, R. A., & Newton, K. J. (2020). *Handbook of Educational Psychology and Students with Special Needs. Handbook of Educational Psychology and Students with Special Needs*. Routledge. <https://doi.org/10.4324/9781315100654>
- Moningka, C., & Selviana, M. (2020). Pengembangan Skala Deception Behavior in Social Media. *Jurnal Psikologi Ulayat*, 8, 110–122. <https://doi.org/10.24854/jpu143>
- Mustika, R. A., & Kusdiyati, S. (2015). Studi Deskriptif Student Engagement pada Siswa Kelas XI IPS di SMA Pasundan 1 Bandung. *Prosiding Psikologi*, 244–251.
- Pepple, D. G. (2022). An ecological perspective of student engagement through digital technology: Practical application and implications. Retrieved from <https://doi.org/10.1002/berj.3823>
- Pramisjayanti, D., & Khoirunnisa, R. N. (2022). Hubungan Antara Self-Efficacy Dengan Student Engagement Pada Siswa SMP X Kelas VIII Selama Masa Pandemi Covid-19. *Character : Jurnal Penelitian Psikologi*, 9(1), 46–55. Retrieved from <https://ejournal.unesa.ac.id/index.php/character/article/view/44709>
- Pratama, M., & Guspa, A. (2022). Analisis Properti Psikometrik Skala Student Engagement Versi Bahasa Indonesia Psychometric Properties Analysis of the Indonesian Version of Student Engagement Scale. *Psycho Idea*, 20(2), 1–5.
- Putri, C., Savitri, J., & Rohinsa, M. (2023). Pengaruh Parent Involvement dan Academic Self-Concept Terhadap School Engagement Dalam Situasi Pandemi Covid-19 Pada Siswa SMK “X” Di Kota Bandung. *Jurnal Penelitian Dan Pengukuran Psikologi: JPPP*, 12(1), 44–51. <https://doi.org/10.21009/jppp.121.06>
- Voelkl, K. E. (1997). Identification with school. *American Journal of Education*, 105(3), 294–318. <https://doi.org/10.1086/444158>