

Confirmatory Factor Analysis of the Indonesian Version of the Academic Engagement Scale (UWES-9S)

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ABSTRACT:

Academic engagement is a positive and satisfying attitude towards work related to the mind characterized by vigor, dedication, absorption. This study is a confirmatory factor analysis test of the academic engagement measuring instrument, namely the Utrecht Work Student Survey (UWES-9S) into the Indonesian version. The research sample was taken using disproportionate stratified random sampling. Data were taken from 208 undergraduate nursing students in the Mojokerto college area. Academic engagement is a development material from work engagement that has been adapted into various languages from various countries and measured by different sample groups. The adaptation process of the UWES-9S measuring instrument consists of the following stages : 1) translation, 2) Synthesis, 3) back translation, 4) Expert test, 5) Try out and Validity and reliability test 6) Submit. Based on the CFA test, the results of the academic engagement scale fit model found that the p value = 0.000 < 0.05. The value of GFI = 0.912, CFI = 0.962, TLI = 0.9411, NFI = 0.953 and IFI = 962 (expected > 0.900) and this shows that the model is fit, meaning that the aspects consisting of vigor, dedication and absorption are theoretically appropriate and are part of academic engagement. Theoretically, if seen from the goodness of fit criteria that have been met, the model is said to be good. The results of the confirmatory factor analysis, all were declared none were dropped because the factor loading value was > 0.5. Thus, the UWES-9S is a representative and efficient measuring instrument for measuring academic engagement among undergraduate nursing students

1. Introduction

The concept of engagement was originally developed to identify everything related to work (Salim et al., 2020). However, along with the development of existing scientific concepts, engagement began to be introduced in educational studies and gave birth to a new concept called academic engagement (Salim et al., 2020). From a psychological point of view, academic activities can be considered as work so this term began to be developed and used in various psychological activities (Sanova et al, 2010; Sari et al., 2022).

The concept of work activity engagement is also identified as a positive, satisfying, and work-related state of mind characterized by vigor, dedication, and absorption (Sanova et al, 2010; Sari et al., 2022). This concept also refers to the work activities carried out by employees (Wulandari & Pratama, 2023). However, this construct has also been applied to activities students engage in referred to as academic engagement (Sanova et al, 2010; Sari et al., 2022). The justification for this is that psychologically, the activities carried out by students can also be considered as a job. In a further sense, the activities

carried out by students are more directed towards a structured, directed and measurable process in order to achieve the expected end goal (Risnawati et al., 2024).

More specifically, academic engagement is oriented as the enthusiasm possessed by students that refers to high levels of energy and mental resilience during learning, willingness to invest effort in learning, and persistence in learning. This condition is also shown when students face various difficulties when learning a material. (Makarim & Primana, 2023).

The next indicator of academic engagement is dedication. Dedication in the concept of academic engagement refers to strong involvement in studies and experiencing a sense of importance of the studies being carried out, enthusiasm for a topic of study, inspiration for a new science, pride in the educational program being taken, and challenges that must be faced during the study of education (Septiana et al., 2021).

The last indicator of academic engagement is absorption. Absorption refers to the ability to receive information delivered, to be able to concentrate on learning materials, to have difficulty detaching oneself from learning materials, and to feel that the time available to learn a new science is not directly proportional to the amount of time needed (Nurmalita et al., 2021)

Academic engagement with three dimensions reflected in the aspects of vigor, dedication, and absorption is included in the Utrecht Work Engagement Scale (Seppala, et. al, 2009; Sinval et al., 2021) which has been developed into the Student Survey format (Sanova et al, 2010; Sinval et al., 2021). The development of the Utrecht Work Engagement Scale measuring instrument into a Student Survey format is known as the Utrecht Work Engagement Scale Student Survey (UWES-SS) (Merino-Soto et al., 2022).

Research on academic engagement conducted so far has been at the pre-professional level (i.e., undergraduate students) and has used the Utrecht Work Engagement Scale for students (UWES-S). The UWES-S is the student version of the most widely used instrument for assessing work engagement, the Utrecht Work Engagement Scale (Merino-Soto et al., 2022). Initially, the UWES included 17 items and three dimensions (i.e., passion, dedication, and absorption). Later, for pragmatic reasons, the UWES was reduced, resulting in a 9-item version (UWES-9) that also demonstrated adequate psychometric properties (Sanova et al, 2010; Domínguez-Salas et al., 2022).

UWES-9 has been validated in industrial-organizational settings in various countries e.g Brazil (Sinval et al., 2021), Finland (Portalanza-Chavarria et al., 2017), Italy (Domínguez-Salas et al., 2022), Japan (Ikegami et al., 2022), Norway (Willmer et al., 2019), Russia (Lovakov et al., 2017), Serbia (Petrović et al., 2017), and South Africa (Tauetsile, 2019). However, validity studies on the UWES-9S are still scarce with mixed evidence regarding its three-factor structure (Loscalzo & Giannini, 2019). The UWES-9S is also popular in Spanish-speaking South American countries, where no rigorous psychometric evaluation has been conducted to date.

Based on psychometric tests in several previous studies with student subjects, it shows that the UWES-9S has good validity and reliability. The results of the research conducted Serrano et al (2019) shows that the Spanish version of the UWES-9S has a Cronbach's Alpha value of $\alpha = 0.91$. The results of the study conducted by Lovakov et al (2017) reported the results of the UWES-9S had Cronbach's Alpha values ranging from 0.86 to 0.90. Overall, the UWES-9S was found to be a reliable and valid scale for assessing academic engagement in students (Halty et al., 2019)

Referring to the results of psychometric tests from previous researchers, UWES-9S has better validity and reliability in measuring academic engagement compared to UWES-17S. Therefore, the academic engagement of undergraduate nursing students in this study will be measured using a scale adapted from UWES-9S (Halty et al., 2019).

Academic engagement measurement tools have not been widely adapted into the Indonesian version. There has also not been much research on academic engagement studied among students. Engagement that is widely developed in Indonesia is engagement within the scope of schools, both student engagement and school engagement with dimensions of cognitive engagement, emotional engagement, and behavioral engagement. These three dimensions have different theoretical bases from

the academic engagement developed in this study. Academic engagement is considered better in measuring student or pupil involvement in the academic area because it measures by positioning academic tasks such as work so that it can be described and studied more precisely (Makarim & Primana, 2023)

If explained back to the theory of work engagement in the scope of work, which is the initial theory of academic engagement, the UWES-9 measuring instrument has been adopted by several researchers in Indonesia. One of the studies regarding the development of the Indonesian version of the UWES-9 measuring instrument is research proposed by Kristiana & Purwono (2019). In the study Kristiana & Purwono (2019) using the Rasch Model in analyzing the dimensions, invariance, reliability of scores, and differential item functioning (based on gender and length of inclusive teaching) with inclusive school outcomes. Internal structure testing with CFA showed that the UWES-9 is a unidimensional instrument with good goodness of fit values (RMSEA = 0.049; CFI, NFI, & GFI > 0.95). It can be concluded that the UWES-9 has good psychometric properties so that it can be used in research and assessment.

Similar research was conducted by Yudhistira et al (2017) which focuses on the development of academic engagement measuring instruments as a tool to better understand students' academic engagement through the confirmatory factor analysis (CFA) model test method with the results of model 1 (first order) obtained vigor results (P.value 0.2728, CFI 0.993, TLI 0.985, RMSEA 0.039), dedication (P.value 0.7781, CFI 1.000, TLI 1.014 RMSEA 0.000), absorption (P.value 0.9216, CFI 1.000, TLI 1.057, RMSEA 0.000) and the results of model 2 (second order) test on the UWES-SS 17 measuring instrument. Both models and the three dimensions are said to be fit and work in accordance with the theory of academic engagement. then the results obtained are P.value 0.0737, CFI 0.982, TLI 0.977, RMSEA 0.035.

There are several versions of the UWES based on the number of items in the scale, namely 24, 17, 15, 9, and 3 items. Shortening the original version of the UWES aims to meet the needs of researchers who face time constraints when conducting work engagement surveys. The shortened version also reduces the effects of fatigue, frustration, and participant resistance to working on too many and time-consuming items. This condition encourages researchers to develop a valid and reliable shortened version of the UWES (Halty et al., 2019). The development process of the shortened version of the UWES resulted in the UWES-9 having psychometric qualities as good as the original version (Serrano et al., 2019).

The self-report questionnaire that will be used in this study is the UWES-9S which was developed by Sanova et al (2010; Sari et al., 2022). UWES-9S is a shortened version of UWES-17S. The UWES-9S consists of three subscales with 9 statement items; 3 items for the vigor aspect, 3 items for the dedication aspect, and 3 items for the absorption aspect (Halty et al., 2019). The role of previous researchers showed that the UWES-9S has better validity and reliability in measuring academic engagement compared to the UWES-17S for practical purposes and avoiding multicollinearity.

This study focuses more on the contribution of research to the educational environment as a study of nursing students' engagement in managing academic tasks. Researchers have not yet found literature that has discussed the development of the UWES measuring instrument in a student survey format. Based on the differences in these dimensions, researchers are interested in developing an academic engagement measuring instrument as an instrument to better determine students' academic engagement through the confirmatory factor analysis (CFA) model test method

2. Objectives

The purpose of this study is to analyze the feasibility Utrecht Work Student Survey (UWES-9S) into the Indonesian version

3. Methods

The research design used was a survey study using a questionnaire given using the Google Form application. This study was designed and conducted at the Health College in the Mojokerto Region. The sample consisted of 208 undergraduate nursing students from colleges in the Mojokerto region

with an age range of 18 to 25 years. The research sample was taken using the disproportionate stratified random sampling technique. Data collection was carried out by distributing the Indonesian version of the UWES-9S questionnaire to students. After evaluating and selecting respondents for this survey, the researcher sent potential respondents a link to the Google Form via email and WhatsApp.

This study uses quantitative methods to develop measuring instruments. The measuring instrument developed is the Utrecht Work Student Survey (UWES-9S) which has been adapted into Indonesian based on the theory of Academic engagement among students. The UWES-9S instrument is a nine-item self-report scale grouped into three, namely vigor (with 3 statement items), dedication (with 3 statement items) and absorption (with 3 statement items).

In the process of adapting and developing the UWES-9S measuring instrument, the researcher carried out the following stages: (1) translation by a language expert, (2) back translation, (3) language adaptation in accordance with the suitability of good and correct Indonesian so that the measuring instrument can be better understood by participants, (4) face validity carried out on prospective participants to check whether participants understand the contents and sentences in the measuring instrument, (5) content validity by expert judgment carried out to obtain input and assessment from experts regarding the existing statement items whether they represent the dimensions and indicators to be measured, (6) data collection from participants, (7) data processing in the form of a CFA Model Test using Amos software, and (8) data analysis.

4. Results

Characteristics of research respondents

In this research, the number of samples involved was 208 respondents. The characteristics of respondents in this study are presented as follows:

Table 1. Characteristics of research respondents based on gender

No	Sex	Number	Percentage
1	Male	48	23,1
2	Female	160	76,9
Total		208	100

Source: Primary research data, 2024

From the research results, it was found that the majority of respondents in this study were women, namely 160 respondents (76.9%).

Table 1. Characteristics of research respondents based on age

No	Sex	Number	Percentage
1	19 years	46	22,1
2	20 years	44	21,2
3	21 years	46	22,1
4	22 years	47	22,6
5	23 years	19	9,1
6	24 years	2	1,0
7	25 years	4	1,9
Total		208	100

Source: Primary research data, 2024

From the research results, it was found that the majority of respondents in this study were 22 years old, namely 47 respondents (22.6%)

Descriptive Analysis

Table 3. Respondents' Achievement Level Regarding Academic Engagement

No	Statement	Mean	Category
Vigor			
1	When I do my work as a student I feel full of enthusiasm	4,33	Strong

No	Statement	Mean	Category
2	I feel excited and capable when I go to college	4,14	Strong
3	I am enthusiastic about my studies	3,96	Strong
Average		12,4	Strong
Dedication			
4	My study inspires me	4,41	Strong
5	When I wake up in the morning, I feel excited to go to class	4,26	Strong
6	I feel happy when I study hard	3,92	Strong
Average		12,5	Strong
Absorbtion			
7	I am proud of my studies	4,46	Strong
8	I am immersed when I study in a field that I like	4,34	Strong
9	I get carried away when I am studying	3,63	Strong
Average		12,5	Strong

Source: Primary research data, 2024

From the analysis of the statement items on the vigor indicator, an average score of 12.4 was obtained with a respondent achievement level of 77.02 which is in the strong category, which means that the vigor indicator owned by the respondents in this study is in the strong category. Vigor refers to the enthusiasm possessed by students during their studies. When students feel enthusiastic about the lectures they have to go through and the practical activities they have to do, then it is certain that students will be able to follow each stage of learning and practice that they have to do to complete their studies

From the results of the analysis of statement items on the dedication indicator, an average score of 12.5 was obtained with a respondent achievement level of 77.94 which is in the strong category, which means that the dedication indicator owned by respondents in this study is in the strong category. Dedication refers to the personal focus of students during their studies. When students are able to focus their attention on the lectures they have to take and the practical activities they have to do, then it is certain that students will focus themselves on following each stage of learning and practice that they have to do to complete their studies

From the analysis of the statement items on the absorption indicator, an average score of 12.5 was obtained with a respondent achievement level of 77.88 which is in the strong category, which means that the absorption indicator owned by the respondents in this study is in the strong category. Absorption refers to the ability to receive material owned by students during their studies. When students have the ability to absorb various materials and information delivered during the lectures that they must undergo and the practical activities that must be carried out, then it is certain that students will be able to complete each stage of the written exam or practice that they must do to complete their studies

Confirmatory Factor Analysis (CFA)

Confirmatory Factor Analysis (CFA) or factor analysis is part of structural equation modeling (SEM) which aims to evaluate the extent to which variables can be measured effectively in describing the concept of factors. CFA checks whether the indicators used have actually determined the variation in the observed variables. In CFA, the testing stages are validity testing and reliability testing. Validity

testing can be seen from the loading factor, if the loading factor value is above 0.5 then the instrument item is said to be valid, conversely if the loading factor value is below 0.5 then the item in the instrument is said to be invalid so that it is dropped or removed from the model and retested. In addition to looking at the loading factor value for the validity test, the average variance extract (AVE) value can be seen. If the AVE value is above 0.5, then the instrument is said to meet the validity standards. The CFA calculation on the academic engagement variable with its indicators is presented in Figure 1:

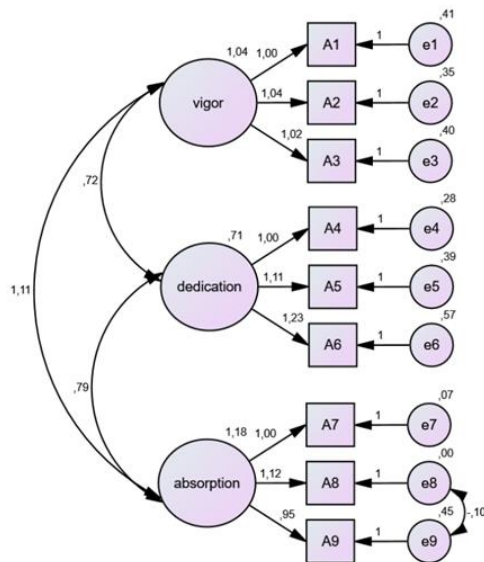


Figure 1. CFA Model 1

In the picture above, it is known that the number of indicators in the academic engagement variable is 9 indicators. The loading factor value for each item is presented in the following table :

Table 4. Standardized Regression Weights

		Loading Factor
A1	<--- Vigor	0,852
A2	<--- Vigor	0,875
A3	<--- Vigor	0,845
A4	<--- Dedication	0,850
A5	<--- Dedication	0,827
A6	<--- Dedication	0,806
A7	<--- Absorbtion	0,987
A8	<--- Absorbtion	0,995
A9	<--- Absorbtion	0,786

Source: Primary research data, 2024

From the results of the model testing using Confirmatory Factor Analysis (CFA), it was found that all nine academic engagement items had loading factor values above 0.5, so it can be concluded that each statement item used in the research instrument is able to explain the academic engagement variable in research respondents which consists of 3 indicators, namely vigor, dedication and absorption.

Validity Test

Furthermore, the validity test can also be seen from the Average Variant Extract (AVE) value as shown in the table below:

Table 5. Average Varian Extract (AVE) and Reliability

Indicator	Academic Engagement
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	Loading Factor	Error
A1	0,852	0,274
A2	0,875	0,234
A3	0,845	0,286
A4	0,850	0,278
A5	0,827	0,316
A6	0,806	0,350
A7	0,987	0,026
A8	0,995	0,010
A9	0,786	0,382
Construct Reliability	0,858	
Variance Extract	0,667	

Source: Primary research data, 2024

From the analysis results, the construct reliability value was obtained at 0.858 with an Average Variant Extract (AVE) of 0.667. Because the Average Variant Extract (AVE) value of $0.667 > 0.50$, the instrument validity requirements are met

Reliability Test

Reliability Test is a measure of the extent to which the indicators used in measuring construct variables show internal consistency and show uniformity in indicating construct variables. In the reliability test, calculate the value of the construct reliability. The reliability value is stated as reliable if the value is above 0.70 (Sürücü et al., 2023). Based on the calculation results, the construct reliability value obtained was $0.858 > 0.7$, so it can be concluded that this research model has met the reliability requirements

Structural Model Test

In testing using Amos, there are stages of testing the research model to see the goodness of fit value, where this value functions to measure the accuracy of the statistical model, especially concluding the variation between the observation values of the model created. The model suitability index used as an indicator of model validity is in accordance with the cut off value suggested by Sürücü et al (2023) presented in the following table along with the results of the model suitability test in this study:

Table 6. Goodness of Fit calculation results

Goodness of Fit Index	Cut off Value	Analysis results	Model Evaluation
P Value	>0.05	0.000	Not fit
RMSEA	<0.08	0.135	Not fit
GFI	≥ 0.90	0.912	Fit
AGFI	≥ 0.90	0.827	Not fit
CFI	≥ 0.90	0.962	Fit
TLI	≥ 0.90	0.941	Fit
NFI	≥ 0.90	0.953	Fit
IFI	≥ 0.90	0.962	Fit

Source: Primary research data, 2024

From the results of the goodness of fit test, a probability value of $0.000 < 0.05$ was obtained with the final conclusion that the model is not fit, an RMSEA value of $0.135 > 0.08$ with the final conclusion that the model is not fit, a GFI value of $0.912 > 0.90$ with the final conclusion that the model is fit, an AGFI value of $0.827 < 0.90$ with the final conclusion that the model is not fit, a CFI value of $0.962 > 0.90$ with the final conclusion that the model is fit, a TLI value of $0.941 > 0.90$ with the final conclusion that the model is fit, an NFI value of $0.953 > 0.90$ with the final conclusion that the model is fit, and

an IFI value of 0.962 with the final conclusion that the model is fit. Of the eight Goodness of Fit Index criteria, 5 criteria were found to be fit so that simultaneously the developed model was declared fit or had met the accuracy of the goodness of fit model.

5. Discussion

Academic engagement is an important variable that must be present in students when they take lectures or complete their studies. Academic engagement will make the learning process that occurs more interesting and find the essence of learning itself. Academic engagement itself is a positive and satisfying attitude towards work related to thoughts that are characterized by vigor, dedication, and absorption.

Vigor

The first indicator of academic engagement is vigor. Vigor is characterized by high levels of energy and mental resilience when an individual does something, the desire to try to complete something that is being worked on, and the perseverance possessed to face every difficulty in completing something (Truta et al., 2018). In relation to the vigor indicator, students must have perseverance in carrying out any activity in the lecture, whether in the form of individual or group assignments, or studying the material that will be delivered by the lecturer or teacher before the lecture begins. Resilience in facing every challenge that exists is also an elaboration of the vigor dimension of Schaufeli et al (2006; Liébana-Presa et al, 2014).

From the results of the data analysis, it was obtained that for the vigor of respondents in attending lectures, the loading factor value for item A1 was 0.852, item A2 was 0.875, and item A3 was 0.845. These three items have loading factor values above 0.5. These results indirectly indicate that the enthusiasm and enthusiasm of respondents in attending learning activities are quite good

A nursing student, in practice, will be faced with various theoretical learning activities, namely learning that is carried out by delivering theory to students in class, and practical learning, namely learning that is carried out through practical activities in the campus' internal laboratory and practical activities in health service facilities where students must participate in practical activities within a certain period of time. This condition indirectly requires students to always be present on time, follow each session of the material presented and undergo practical activities to adjust to conditions in the field. In order to ensure that nursing students are able to do this, within the student's self, a sense of enthusiasm and enthusiasm is needed to participate in the learning process carried out.

It is not uncommon to find nursing students who feel tired of the learning process they are doing. This condition is a natural response to every student who studies in the field of nursing. However, the striking difference is the ability of individual students to rekindle their enthusiasm and passion. When students are able to maintain their enthusiasm and passion, this condition indirectly shows that nursing students have a positive coping mechanism. In order to ensure that nursing students are able to have positive coping, nursing students need positive support from the environment around them. Adequate lecture facilities, a conducive academic atmosphere, professional lecturers in their fields, and materials that are always updated will help nursing students maintain positive coping in themselves to ensure that their enthusiasm and passion are well maintained

There are various challenges such as the difficulty of completing certain course assignments, exams with difficult questions, and so on. For that, there must be efforts made to overcome the various difficulties that arise. The methods used to overcome these difficulties depend on how great the difficulties are. So in this dimension, students or learners must have perseverance, resilience, and efforts made to face every difficulty that exists.

Dedication

The next indicator of academic engagement is dedication. Dedication refers to an individual's involvement in something that is being done or worked on and considering it as something important to them, a sense of enthusiasm to be able to complete something, the emergence of inspiration from within the individual to complete something, a feeling of pride when being able to complete something

and the emergence of a feeling of being challenged to complete something (Carmona-Halty et al., 2021).

This dimension states that students must have a sense of pride in the place where they study. A sense of pride can arise because the place where students or pupils study is a good place to forge the process and can also be a place that has achievements that can be proud of. So on that basis, students have the inspiration to study as much as possible at the college or university that exists and as much as possible to achieve in the academic field (Teuber et al., 2021).

From the results of the data analysis, it was obtained that for the dedication of respondents in following nursing lectures, the loading factor value for item A4 was 0.850, item A5 was 0.827, and item A6 was 0.806. These three items have loading factor values above 0.5. These results indirectly indicate that the ability to inspire and the respondents' liking for following learning activities are quite good

For nursing students, they will be required to always be present in lectures and practice activities with a tolerance limit for absence of 15 percent of the total number required. This condition indirectly forces nursing students to always be in optimal health conditions even with a very high lecture load. This condition is natural to occur in the learning process for nursing students considering the risks that can occur due to inactivity from students when providing care to patients are a decline in the patient's health condition or the occurrence of severity in patients who are undergoing treatment, an increase in the workload that must be carried out by the nursing care team, and dissatisfaction of health service users with nursing care actions provided by health facilities

The ability of nursing students to maintain their dedication to the lecture process that they must undergo and the practice process that must be taken, is an important thing that must be considered. Nursing education programs must be able to inspire nursing students, and nursing education programs must be able to bring out passion from within students. When this condition arises in students, then students will be able to follow lecture and practice activities according to the desired expectations.

In order to ensure that it can be built from within the students, the learning environment around the nursing students must be able to provide support to the nursing students to maintain the dedication of the nursing students themselves. Ease of access to various information needed by nursing students, both offline and online, will make nursing students able to maintain their dedication to following the nursing education program.

Absorbtion

The last indicator of academic engagement is absorption. Absorption is characterized by the concentration carried out by individuals in completing something, the emergence of feelings of happiness in completing their responsibilities, and the difficulties faced by individuals in leaving something where when individuals have this, then individuals tend to feel that the time they have is not sufficient for their needs or in other words individuals feel that time passes quickly (Mulyadi & Saraswati, 2020).

In this dimension, students must be able to direct their attention or focus when they have to face academic activities. When they have to face lectures, they must be able to focus in every session in the lecture. Students in this dimension are required to divide their time and focus. By directing their full attention to academic activities, students will increasingly know and master what is taught by the lecturer or teacher. Don't let it be that when there is a lecture, students are busy playing gadgets or anything that causes less than full attention (Myint & Khaing, 2020)

From the results of the data analysis, it was obtained that for the respondents' absorption ability in following nursing lectures, the loading factor value for item A7 was 0.987, item A8 was 0.995, and item A9 was 0.786. These three items have loading factor values above 0.5. These results indirectly indicate that the level of pride and self-dissolution of respondents in following the learning process activities is quite good

The nursing lecture process is identical to spending a lot of time studying. In addition to nursing students having to be able to understand the material in theory, nursing students must also be able to apply the theories they get in practical activities. It is not uncommon when nursing students are in the

field and provide nursing care to patients, students are faced with conditions that are not in accordance with the theories they have learned. This is a natural condition to occur considering that between one patient and another, the conditions experienced / health complaints that arise are often not the same. In order to ensure that students are able to provide comprehensive nursing care, students must actively study various theories that have been developed and the results of clinical research activities that have been carried out previously. With their ability to access various information, nursing students will get more and more information

It is also not uncommon to find nursing students who complain that the time they have to study a material is very limited. This condition can occur when nursing students are able to focus their attention on the nursing material being studied. When students are able to focus their attention on the material being studied, the time available will tend to feel like it passes quickly. However, the impact of this is that the amount of information that nursing students are able to absorb will also increase.

Academic engagement is an important variable in the learning process carried out for students, especially nursing students. Academic engagement is basically an important component that drives nursing students to be able to follow each stage of nursing lectures well. Academic engagement involves enthusiasm, dedication and the ability to absorb good information from within the nursing students themselves. This condition cannot be separated from the development of nursing science itself where at all times, nursing science has the potential to always develop from time to time. It is not uncommon for the current nursing science to be abandoned and no longer practiced on patients as users of health services because of the latest innovations in nursing actions that are more efficient and effective to be carried out

In order to ensure that every student has positive academic engagement, this requires full support from every element of the academic community on campus itself. The implementation of policies that support the creation of positive academic engagement during students' education is the first factor that must be considered, especially by nursing study program managers. This policy can be achieved through evaluation of the learning curriculum and nursing materials that must be delivered to nursing students. Next is the competence of lecturers / course instructors. Institutional policies that require every lecturer / instructor to always update their knowledge through training activities, seminars, workshops or the like, will help lecturers / course instructors to always provide updated material to nursing students. In addition, providing opportunities to pursue further studies for lecturers / course instructors is also a form of institutional policy that will ensure that every knowledge and information delivered to students is always up to date.

Next are learning facilities and infrastructure. In nursing education programs, nursing knowledge and actions carried out on patients with certain diagnoses of disorders are likely to always change to adjust to patient conditions in the field. Lecturers, course instructors, and nursing students must be fully aware of this condition. They can update their knowledge by increasing the number of references that can be accessed both offline and online. The availability of updated nursing material books and the ease of accessing various research results in the field of nursing will help the academic community in updating their knowledge. Nursing educational institutions that are oriented towards improving the quality of graduates / students must of course actively pay attention to this condition. Updating every reference book in the library, preparing adequate internet access that can be actively used by nursing students, and preparing various accesses to information related to research results in the field of nursing will help the academic community in improving the quality of learning and is carried out where the expected final output is an increase in the quality of graduates as prospective professional nursing staff. The last factor is the availability of facilities for nursing students to apply the nursing theory they have learned during their studies. Nursing educational institutions must at least have a nursing laboratory that can be freely accessed by students, where in this nursing laboratory, students can learn to practice the knowledge they have learned. Using phantoms freely, using laboratory equipment wisely, conducting clinical practice activities in health facilities according to the needs or prerequisites of the

course and an adequate student guidance process will make nursing students feel comfortable in taking the educational program that they must undergo.

The complexity of factors needed to ensure that every nursing student is able to have positive or high academic engagement is the full responsibility of the existing nursing education institution. When the management of the nursing institution is able to ensure that each of these supporting factors is actively able to facilitate nursing students in completing their studies, then it is certain that nursing students will have positive and high academic engagement. When nursing students have positive and high academic engagement, it is possible that nursing students will have adequate skills according to the needs of the required nursing services and at the same time will increase the academic achievement of the nursing students themselves

Conclusion

Academic engagement in learning to nursing students in this study can be seen from the factor analysis (confirmatory factor analysis). Based on the results of the research that has been conducted, of the 9 research statement items, all have a loading factor value above 0.5 so that all statement items representing the vigor, dedication and absorption indicators are declared valid.

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