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THE ROLE OF STUDENTS' ENGAGEMENT, KNOWLEDGE CONSTRUCTION APPROACHES, AND ACHIEVEMENT MOTIVATION ON INCREASING OF ACTIVE LEARNING

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Abstract:
The purpose of the study is to investigate the relationships between students' engagement, knowledge construction approaches, and achievement motivation on increasing of active learning of university students. The quantitative correlational approach, the structured questionnaire, and the cluster random sample of students (N= 264) were selected to be used in the study. It is found that there is a medium positive correlation between knowledge construction approaches and active learning variables (r = .483), where increases of knowledge construction approaches values were associated with increases of active learning values. The results showed that there is a small positive correlation between students' engagement and active learning (r = .145), as well as between achievement motivation and active learning (r = .035). It is found that the total variance of active learning levels explained by students' engagement, knowledge construction approaches, and achievement motivation is 26.0%, the other variance may be explained by other variables. The study showed that knowledge construction and student engagement influence strongly active learning.

Keywords: students' engagement, knowledge construction approaches, achievement motivation, active learning

1. Introduction and literature review

Students' engagement, knowledge construction approaches, and achievement motivation are meant to be the important variables that impact the active learning of university students. The purpose of the study is to investigate the relationships between the students' engagement, knowledge construction approaches, and achievement motivation on increasing of active learning of university students. *The research questions include:* (1) Is there a positive linear correlation between student engagement and active

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learning? Does active learning increase with student engagement? (2) Is there a positive linear correlation between the achievement motivation and active learning? Does active learning increase with achievement motivation? (3) Is there a positive linear correlation between the knowledge construction approaches and active learning? Does active learning increase with the knowledge construction approaches? (4) How much of the variance in active learning scores can be explained by the students' engagement, knowledge construction approaches, and achievement motivation?

1.1 Conceptual framework

Constructivist approach (Howe and Berv, 2000) requires an active participation in the classroom to develop the learning process, where learners participate in generating understanding (Brooks & Brooks 1993). The framework for the study was developed from an extensive review of existing evidence about students' engagement, knowledge construction approaches, achievement motivation, and active learning. The review began with a search for relevant empirical research through ERIC, and Sage, using the keywords *students' engagement*, *knowledge construction approaches*, *achievement motivation*, and *active learning*. The results of the study were interpreted in terms of constructivism theory, and research conducted in the field. Figure 1, summarizing the framework resulting from our review, proposes a set of relationships among four constructs; students' engagement, knowledge construction approaches, achievement motivation as independent variables influence active learning as the dependent variable.

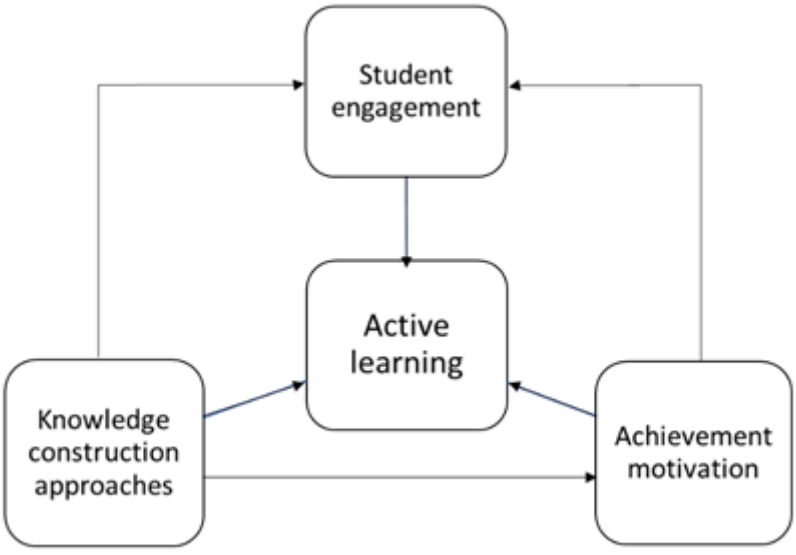

Figure 1: Conceptual framework

1.2 Student engagement, the knowledge construction approaches, and achievement motivation vs active learning

The student engagement, the knowledge construction approaches, achievement motivation, and are meant to be related positively to the active learning of students at the university. At the same time student engagement, the knowledge construction

approaches, and achievement motivation is meant to be important variables that predict the academic success of students. Ruban, McCoach, McGuire, & Reis (2003) indicates that students with learning difficulties differed significantly from students without learning difficulties in the relationships between their motivation for and use of standard self-regulated learning strategies and compensation strategies, which in turn provided a different explanation of academic achievement for students with and without learning difficulties. Gerrity, Hourigan, & Horton (2013) indicated that repetition, student choice, and increased response time were considered important teaching strategies that led to student growth and learning. Likewise, having in place clear directions and expectations, a behavior plan, and fostering a positive atmosphere that was free of distractions were identified by the participants as important conditions that must be met for learning to take place.

Seider, Gillmor, & Rabinowicz (2012) considered the impact of the community service learning program on participating students expected political involvement. Through a mixed methods research design, the authors found that university students participating in the program demonstrated statistically significant increases in their expected political voice in comparison with peers in a control group. Qualitative interviews revealed that the program increased students' awareness of political and social issues; heightened their commitment to philanthropy; fostered their interest in pursuing socially responsible work; and strengthened their commitment to working for social change. Lu, Li, Stevens, & Ye (2017) compares gifted and talented students in three groups with normal (non- gifted and talented) students by examining student characteristics, reading, schooling, learning methods, and use of strategies for understanding and memorizing. Results indicate that the gifted and talented and non-gifted and talented gender distributions show differences; gifted and talented groups' reading time, reading material types, and level of interests are higher than or different from non- gifted and talented, but their use of the library is not. Furthermore, teacher-student relationships of gifted and talented groups are better than those of non- gifted and talented, but their attitudes toward school show no differences. Results of t-tests reveal that two learning methods are employed significantly more often by gifted and talented than by non- gifted and talented, but a third method is used less by gifted and talented students. Fedeli, Giampaolo & Coryell (2013) investigated the implementation of Malcolm Knowles's 1986 model of learning contracts in a current university context. Three professors conducted an integrated course, making extensive efforts to share the aims of their programs and involve the students in this research. The findings show improving the contract and better involving the students. Finally, the technology must be improved to be more user-friendly for use in blended courses. Herrmann (2013) indicates that with an increasing awareness that many undergraduates are passive during teaching sessions, calls for instructional methods that allow students to become actively engaged have increased. Cooperative learning has long been popular at the primary and secondary level and, within recent years, higher education. However, empirical evidence of the impact of cooperative learning at the university level is still limited. Turki, Jdaitawi, & Sheta (2017) investigates the impact of social connectedness,

achievement motivation and emotional-social learning upon the adjustment of students in a university context. In addition, the study investigates the differences in achievement motivation and emotional social learning levels between the genders. According to the findings, the relationship between the study variables does not significantly differ between genders. Emotional-social learning is significant in terms of predicting the adjustment. Furthermore, gender differences were noted in terms of emotional-social learning levels, but not in terms of achievement motivation and social connectedness.

Beischel (2013) investigated a hypothesized model describing the direct effects of learning variables on anxiety and cognitive learning outcomes in a high-fidelity simulation experience. The secondary purpose was to explain and explore student perceptions concerning the qualities and context of high-fidelity simulation affecting anxiety and learning. Being ready to learn, having a strong auditory-verbal learning style, and being prepared for simulation directly affected anxiety, whereas learning outcomes were directly affected by having strong auditory-verbal and hands-on learning styles. Anxiety did not quantitatively mediate cognitive learning outcomes as theorized, although students qualitatively reported debilitating levels of anxiety. Herdlein, & Zurner (2015) demonstrated that students view interactions outside the classroom as important opportunities to develop and hone a myriad of personal knowledge and skill sets important to becoming global citizens and internationally competent professionals. Ituma (2011) suggest that a large percentage of the students had very positive perceptions and the frequency of usage of the e-learning system was also very high, with the clear majority using it frequently to supplement the traditional face-to-face classroom method. These results were irrespective of gender, age, and nationality. Naude & Derera (2014) revealed that students perceive the case study teaching and learning method to be beneficial to their learning skills and hence that it increases their chances of academic success. Therefore, as the abovementioned authors indicated, there is a positive linear correlation between student engagement, the knowledge construction approaches, achievement motivation, and active learning of students at the university.

Therefore, it is hypothesized that:

Hypothesis #1: There is a positive linear correlation between student engagement, the knowledge construction approaches, achievement motivation, and active learning

1.3 The relationships between students' engagement, knowledge construction approaches, achievement motivation, and active learning

The students' engagement, knowledge construction approaches, achievement motivation are meant to be the most important variables that influence the active learning of students at the university. At the same time student engagement, the knowledge construction approaches, and achievement motivation is meant to be important variables that impact the academic achievements of students. Dolnicˇar, Podgornik, & Bartol (2017) investigated the effects of lecture-based learning, project-based learning and problem-based learning using the information literacy test as an

assessment tool, about the total information literacy test score, specific information literacy contents according to the five standards and students' mental skills according to the Bloom's cognitive categories. While all three teaching methods showed a significant improvement in the information literacy post-test, the active-learning groups of project-based learning and problem-based learning scored significantly better than the lecture-based learning group. The most notable positive difference was observed in students' effective access to information related to database searching skills, in the intellectual property/ethics issues and in the cognitive category of comprehension. Lin (2018) directed the problem-based learning group by the problem and surveyed the internet to identify solutions. The non- problem-based learning group was instructed using the teacher lecture method. The two groups completed pre- and posttests, an instructional questionnaire, and self-reports. The statistic results showed that the problem-based learning group achieved significantly higher mean scores than the non-problem-based learning group. Additionally, the questionnaire results demonstrated that problem-based learning significantly enhanced the participants' active learning and synthesized their cognitive processing. Hearns, Miller, & Nelson (2010) compared the effect of two teaching/learning methods- hands-on versus demonstration on immediate, 15-minute, and 24/48-hour recall in 60 university students. Each student either made no-bake cookies or observed the demonstrated process. Inter-rater reliability concerning recall scores was strong (intraclass correlation coefficient = .98). Analysis of variance across all three levels of recall supported the hands-on condition ($F [1,58] = 4.45$, $p = .039$). However, only one of the three t-tests (recall at 24/48 hours) comparing hands-on learning to the demonstration at the three points of recall, was statistically significant ($t [58] = 2.48$, $p = .008$, with effect size $d = .648$).

Heiman (2006) examined differences in the learning styles of students with and without learning disabilities at a distance-learning university. Results revealed that students with learning disabilities preferred to use more stepwise processing, including memorizing and drilling, than non-learning disabilities students. In addition, students with learning disabilities reported a higher need for self-regulation strategies than their non-learning disability peers, including controlling their learning process, self-orientation, planning, monitoring, and continuous evaluation of their learning process and results. Learning disability students also claimed to lack regulation, noting their difficulties with the learning process. Reed, Kennett, Lewis, & Lund-Lucas (2011) revealed that students entering university with and without learning disabilities have similar challenges. Both groups showed increases inattentiveness, and academic and general resourcefulness after the course. Students with learning disabilities experienced greater gains in academic self-efficacy in comparison to their non-disabled peers. Vandiver & Walsh (2010) suggest that students' learning preferences increased over the semester for each type inquired; students felt, upon completion of the semester, that they could conduct a research project if asked to do so; their interest in research methods and appreciation for the subject increased over the semester; and they enjoyed learning about their peers' behavior. Harris-Reeves, & Mahoney (2017) suggest that

students might benefit from work-integrated learning experiences in their foundation year of university.

Alkhateeb & Nasser (2014) using *Learning and Study Strategies Inventory* investigated anxiety, attitude, concentration, information processing, motivation, self-testing, selecting main ideas, study aids, time management, and test strategies at undergraduate university students. Scores obtained provide valid assessments of students' use of learning and study strategies related to skill, will, and self-regulation components of strategic learning and academic achievement. There also were statistically significant differences between higher and lower achieving students in their learning and study strategies. Anxiety and test strategies were significant predictors of academic achievements of students. Sample (2012) examines specific dimensions of the intercultural learning of students at the university. Students undergo both an interdisciplinary, international curriculum and study abroad for at least a semester, taking courses on cultural adaptation before they leave and reenter. When they return from abroad, changes in their intercultural sensitivity are assessed through both direct-reflection papers and the reporting of *critical incidents*, and indirect methods- use of the *Intercultural Development Inventory*. It is found substantial advances in intercultural sensitivity for these students, which is largely consistent across assessment methods. On average, their *Intercultural Development Inventory* scores change by 19.78 points, which is both a significant change for these students and is significantly different from university students who have not been a part of the international curriculum or have not studied abroad. Nieto & Zoller (2010) found that instructors reported a higher level of intercultural sensitivity than college students; that females scored higher than males on intercultural sensitivity. Finally, only instructors, not students revealed that culture and language were the greatest challenges for international students.

Song & Chen (2012) investigated how university students perceive an excellent physical education teacher at the university level. The model included two concepts, best defined as *Caring for Students* and *Being Responsible*. The other four concepts were: *Being A Subject Expert*, *Being Student-Focused*, *Prompting Students' All-Around Growth,* and *Being A Lifelong Learner*. Multivariate analysis of variance showed that students' grade level and major contributed to statistically-significant differences in their conceptualization of excellent physical education teaching. Alamri & Tyler-Wood (2017) indicated that there were two factors: (1) the teaching and social presences and (2) the facilitating and supporting of individual communication related to interaction among learners with disabilities and their instructors that impacted students' perceived learning achievement and class satisfaction. They also indicated that social interaction factors, such as social presence, were correlated with less perceived learning achievement and satisfaction. Ellis & Bliuc (2017) indicate that there are consistent and distinct patterns of associations between the different aspects of the learning experience that reveal the role of online learning technologies in the student experience of learning. The findings suggest that qualitative differences in how students use online learning technologies and differences in how they perceive online learning technologies are logically related to the quality of outcomes.

Rimiene (2002) investigated how a critical thinking development programme influenced students' critical thinking skills and motivation. Programme of critical thinking is based on the ideas of humanistic psychology and meaningful learning, and the main learning methods deployed were based on co-operative learning. Critical thinking development course significantly influenced all the measured components of the students' critical thinking skills and some components of their motivation. Li & Yang (2016) found that: (a) interest is significantly correlated with concentration; (b) learning styles have no significant effect both on concentration and achievement; (c) learning styles and interest do not yield interaction effects on the learning concentration of students, but interest alone significantly affects the latter; and (d) learning styles, interest, and concentration do not yield interaction effects on the academic achievement of students. Sizoo, Malhotra & Bearson (2003) pointed out that to be successful in a distance learning environment, students must not only be self-disciplined but also have effective learning skills. Willard-Holt, Weber, Morrison & Horgan (2013) indicated that students perceived that their overall school experiences failed to assist them in learning to their potential, although they were able to use their strengths to circumvent their weaknesses. They pointed out that teachers should allow twice-exceptional learners more ownership over their learning and more choice and flexibility in the topic, the method of learning, assessment, pace, and implementation of group collaboration. From a different point of view, Shaw (2017) shows that neither different knowledge map construction methods nor learning styles significantly influenced individual learning performance. Either of the knowledge map construction methods applied to the programming language learning and the learning scores is significantly higher than average. Learning style does not moderate knowledge map construction methods on learning scores. However, learning style is a significant moderator of knowledge map construction methods on learning satisfaction. Therefore, as the abovementioned authors indicated, students' engagement, knowledge construction approaches, and achievement motivation predict active learning of students at the university. Therefore, it is hypothesized that:

Hypothesis #2: How well do the measures of control: students' engagement, knowledge construction approaches, and achievement motivation predict active learning? How much variance in active learning can be explained by scores on these scales?

2. Methodology

2.1 Method

The quantitative correlational approach is the method used in the study. Students' engagement, knowledge construction approaches, achievement motivation, and active learning are considered quantitative continues variables in the study.

2.2 Instruments

The structured questionnaire was used to collect the primary quantitative data of independent and dependent variables from students. Structured questionnaires are based on *the relevance of science education (Rose) questionnaire* (Camilla and Svein, 2004), and are adapted, piloted and applied by the researcher.

2.3 Participants

The cluster random sample of students (N= 264) was selected to be used in the study. From the random sample of students, there are 183 females (69.3 percent) and 82 males (30.7 percent).

2.4 Procedure

The relationship between students' engagement, knowledge construction approaches, achievement motivation, and active learning was investigated using Pearson correlation coefficient. Linear multiple regression was used to assess the skills of three control measures to predict active learning levels by students' engagement, knowledge construction approaches, achievement motivation. Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity, with no violations noted.

3. Results and discussion

3.1 Descriptive statistics

Table 1: Students' engagement frequencies

Students' engagement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3 Neutral	23	8.7	8.7	8.7
	4 Often	98	37.1	37.1	45.8
	5 Always	143	54.2	54.2	100.0
	Total	264	100.0	100.0	

As shown in table 1, 54.2% of students claim that student engagement happened always; 37.1% of them claim often, and 8.7% of them are neutral. Referring to descriptive statistics, 264 respondents ranging in levels from 3 to 5, with a mean of 4.45 and a standard deviation of .651. This result means that student engagement happened mostly always or often in aula in lecturing time.

Table 2: Knowledge construction approaches frequencies

Knowledge construction approaches

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Never	65	24.6	24.6	24.6
	2 Rare	103	39.0	39.0	63.6
	3 Neutral	23	8.7	8.7	72.3
	4 Often	31	11.7	11.7	84.1
	5 Always	42	15.9	15.9	100.0
	Total	264	100.0	100.0	

As shown in table 2, 27.6% of students claim that knowledge construction approaches happened always or often; 63.6% of them claim rare or never; and 8.7% of them are neutral. Referring to descriptive statistics, 264 respondents ranging in levels from 1 to 5, with a mean of 2.55 and a standard deviation of 1.392. This result means that knowledge construction approaches happened mostly rare or never in aula in lecturing time.

Table 3: Achievement motivation approaches frequencies

Achievement motivation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Never	47	17.8	17.8	17.8
	2 Rare	74	28.0	28.0	45.8
	3 Neutral	61	23.1	23.1	68.9
	4 Often	53	20.1	20.1	89.0
	5 Always	29	11.0	11.0	100.0
	Total	264	100.0	100.0	

As shown in table 3, 31.1% of students claim that achievement motivation happened always or often; 45.8% of them claim rare or never, and 23.1% of them are neutral. Referring to descriptive statistics, 264 respondents ranging in levels from 1 to 5, with a mean of 2.78 and a standard deviation of 1.262. This result means that achievement motivation approaches happened mostly rare or never in aula in lecturing time, although there are small differences.

Table 4: Active learning frequencies

Active learning

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Never	38	14.4	14.4	14.4
	2 Rare	64	24.2	24.2	38.6
	3 Neutral	76	28.8	28.8	67.4
	4 Often	67	25.4	25.4	92.8
	5 Always	19	7.2	7.2	100.0
	Total	264	100.0	100.0	

As shown in table 4, 32.6% of students claim that achievement motivation happened always or often; 38.6% of them claim rare or never, and 28.8% of them are neutral. Referring to descriptive statistics, 264 respondents ranging in levels from 1 to 5, with a mean of 2.87 and a standard deviation of 1.161. This result means that achievement motivation approaches happened mostly rare or never in aula in lecturing time, although there are small differences.

3.2 Inferential statistics

A. Test of hypothesis 1

Hypothesis #1: There is a positive linear correlation between student engagement, the knowledge construction approaches, achievement motivation, and active learning.

Table 5: Pearson correlation coefficients

Correlations

		Active learning	Students' engagement	Knowledge construction approaches	Achievement motivation
Pearson Correlation	Active learning	1.000	.145	.483	.035
	Students' engagement	.145	1.000	-.035	.046
	Knowledge construction approaches	.483	-.035	1.000	.027
	Achievement motivation	.035	.046	.027	1.000
Sig. (1-tailed)	Active learning	.	.009	.000	.286
	Students' engagement	.009	.	.285	.229
	Knowledge construction approaches	.000	.285	.	.330
	Achievement motivation	.286	.229	.330	.
N	Active learning	264	264	264	264
	Students' engagement	264	264	264	264
	Knowledge construction approaches	264	264	264	264
	Achievement motivation	264	264	264	264

As shown in Table 5, there is a medium positive correlation between knowledge construction approaches and active learning variables, r = .483, n = 264, p <.005, where increases of knowledge construction approaches values were associated with increases in active learning values. Meanwhile, there is a small positive correlation between students' engagement and active learning (r = .145), as well as between achievement motivation and active learning (r = .035).

The result was consistent with previously reported works, who argued that there is a significant positive relationship between student engagement, the knowledge construction approaches, achievement motivation, and active learning (Ruban, McCoach, McGuire, & Reis, 2003; Gerrity, Hourigan, & Horton, 2013; Seider, Gillmor, & Rabinowicz, 2012; Lu, Li, Stevens, & Ye, 2017; Fedeli, Giampaolo & Coryell, 2013; Herrmann, 2013; Turki, Jdaitawi, & Sheta, 2017; Beischel1, 2013; Herdlein, & Zurner, 2015; Ituma, 2011; Naude & Derera, 2014).

In conclusion *hypothesis # 1: There is a positive linear correlation between student engagement, the knowledge construction approaches, achievement motivation, and active learning*, is been supported.

B. Test of hypothesis 2

Hypothesis #2: How well do the measures of control: students' engagement, knowledge construction approaches, and achievement motivation predict active learning? How much variance in active learning can be explained by scores on these scales?

Table 6: Multiple regression coefficients

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1df2	Sig. F Change
1	.510[a]	.260	.252	1.004	.260	30.499	3 260	.000

a. Predictors: (Constant), Achievement motivation, Knowledge construction approaches, Students' engagement

As shown in Table 6, total variance of active learning levels explained by students' engagement, knowledge construction approaches, and achievement motivation, (the model) is 26.0%, F (3, 30.499), $p < .005$, the other variance may be explained by other variables.

Table 7: Multiple regression beta coefficients

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
	B	Std. Error	Beta			Zero-order	Partial	Part
(Constant)	.504	.461		1.092	.276			
Students' engagement	.289	.095	.162	3.031	.003	.145	.185	.162
1Knowledge construction approaches	.408	.045	.489	9.153	.000	.483	.494	.488
Achievement motivation	.013	.049	.014	.266	.009	.035	.017	.014

a. Dependent Variable: Active learning

In the model, as shown in table 7, the control measure is statistically significant recording higher standardized beta values for students' engagement *beta* = .162; p < .005, knowledge construction approaches *beta* = .489; p < .005, and achievement motivation *beta* = .014. The total variance of active learning levels explained by students' engagement separately is 16.2%, *F* (3, 30.499), *p* < .005, explained by knowledge construction approaches separately is 48.9%, F (3, 30.499), and explained by achievement motivation separately is 1.4%, *F* (3, 30.499), *p* < .005. This indicates that knowledge construction and student engagement influence strongly active learning.

The result was consistent with previously reported works, who argued that : students' engagement, knowledge construction approaches, and achievement motivation predict active learning (Dolnicˇar, Podgornik, & Bartol, 2017; Lin, 2018; Hearns, Miller, & Nelson, 2010; Heiman, 2006; Reed, Kennett, Lewis, & Lund-Lucas, 2011; Vandiver & Walsh, 2010; Harris-Reeves, & Mahoney, 2017; Alkhateeb & Nasser, 2014; Sample, 2012; Nieto & Zoller, 2010;Song & Chen, 2012; Alamri & Tyler-Wood, 2017; Ellis & Bliuc, 2017; Rimiene, 2002; Li & Yang, 2016; Sizoo, Malhotra & Bearson, 2003; Willard-Holt, Weber, Morrison & Horgan, 2013).

In conclusion **hypothesis #2:** How well do the measures of control: students' engagement, knowledge construction approaches, and achievement motivation predict active learning? How much variance in active learning can be explained by scores on these scales? is been supported.

4. Conclusions and implications

One main limitation of the study should be acknowledged as part of the conclusions. The measurement of students' engagement, knowledge construction approaches, achievement motivation, and active learning variables is been made based on self-reported instruments. The aim of this study was to investigate the effects of students' engagement, knowledge construction approaches, and achievement motivation on active learning. The prior assumption was that students' engagement, knowledge construction approaches, and achievement motivation influence active learning.

The results showed that student engagement happened mostly always or often in aula in lecturing time. It is found that knowledge construction approaches happened mostly rare or never in aula in lecturing time. The results showed that achievement motivation approaches happened mostly rare or never in aula in lecturing time, although there are small differences to always or often scales. The results showed that active learning approaches happened mostly rare or never in aula in lecturing time, although there are small differences to always or often scales. Therefore, faculties and departments, as well as lecturers themselves should support more the students, especially to engage, motivate, as well as to use more knowledge construction approaches during lecturing time in aula.

It is found that there is a medium positive correlation between knowledge construction approaches and active learning variables (r = .483), where increases of knowledge construction approaches values were associated with increases of active

learning values. The results showed that there is a small positive correlation between students' engagement and active learning (r = .145), as well as between achievement motivation and active learning (r = .035).

It is found that the total variance of active learning levels explained by students' engagement, knowledge construction approaches, and achievement motivation, (the model) is 26.0%, the other variance may be explained by other variables. The study showed that knowledge construction and student engagement influence strongly active learning.

Therefore, the lecturers should use more students' engagement, knowledge construction approaches, achievement motivation, to increase active learning of students and to support their academic achievements. The results of the study, supported by other researchers about the influence of more students' engagement, knowledge construction approaches, achievement motivation on active learning have important implications for future research. Such research should investigate the influence of other variables on active learning. Results of this study also have important implications for practice. The important other interventions should be designed to develop and to support students and lecturers because it is confirmed by this study that students' engagement, knowledge construction approaches, achievement motivation influence active learning. Overall, the findings of this study enhanced theoretical and practical understanding as students' engagement, knowledge construction approaches, achievement motivation is important variables that increase active learning and support academic achievements.

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