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The Relationship of Achievement Motivation and Cognitive Style with Concrete Construction Learning Outcomes

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ABSTRACT

Purpose - This research is to determine the relationship of achievement motivation and cognitive style with concrete construction learning. **Methodology/approach** - It was a quantitative research with a correlation analysis method. The samples were students of the Faculty of Engineering, Civil Engineering Program, Semester V at the University in Bekasi - West Java amounted to 18 students selected by proportional random sampling. The data were analyzed with inferential statistics using regression and correlation analysis. **Findings** - The results concluded that (1) there is a positive correlation between achievement motivation with concrete construction learning; (2) there is a positive correlation between cognitive style with concrete construction learning; (3) there is a positive correlation between achievement motivation and cognitive style together have positive with concrete construction learning. **Novelty/value**- Novelty/Values of this research are designers and managers of learning concrete construction courses can create a learning process by continuously growing achievement motivation and cognitive style in students and the need for a consistent attitude in their implementation as

Keywords
Motivation, Cognitive Style, Concrete Construction

INTRODUCTION

The development of construction in all fields has made the rapid development of construction industry sector, this is shown by the existence of some development types followed by the development of building construction sector as a means. Thus, it needs more and more skilled workers in this field. Hence, to meet the needs of human resources, a source of income is needed, namely educational institutions that produce skilled workers who directly handle the work in the field, For example the Faculty of Engineering, Civil Engineering (Agusra et al., 2021; Herwina, 2022; Iskamto, 2021; Iskamto et al., 2021).

In terms of buildings, with the advancement of technology, and the limited land for buildings, especially in big cities, the tendency to build high-rise buildings is getting higher. Therefore, concrete construction becomes very dominant, and in order to make concrete construction well and meet the quality requirements, it needs the experts of building sector. The experts in this case, not only as planners, implementers, and supervisors of building construction, but also workers who directly work on work in

the field, so that the spearheads in concrete construction work are those who directly handle concrete work in the field (Adeyemi, 2022; Iskamto, 2022; Siswanto & Daniswara, 2022).

Currently there are little workers working on concrete in the workplace who have the ability to make adequate concrete. In the concrete working, they still have to be directed and supervised, so for large concrete works supervision is carried out very strictly.

Based on the foregoing, it needs knowledge and skills to make concrete construction in the field of work with the readiness of Civil Engineering students. So that the material for making concrete construction is included in the subject matter of Knowledge and Testing of Building Materials, which they consist of concrete technology theory, building material theory and practice, and concrete manufacture and testing .

To encourage students to always master the theory and practice of making concrete well as well as to have the ability in making good quality concrete, it needs to have high achievement motivation. This is based on McClellend's opinion, which is conveyed by Robert S. Feldman (1989), that people who have high achievement motivation tend to like learning, working hard, and feeling satisfied if they can complete tasks well. In addition, McClelland's opinion was strengthened by John P. Dworetzky (1985), "People with a high need to achieve tended to do better in school than those with a low need."

Besides, it also needs to have a good cognitive style. In fact, in the field of concrete work, problems are often found to solve immediately. So it takes a high enough cognitive style to immediately obtain problem solving solutions.

The discussion of concrete technology knowledge has become an interesting study up to now, because the results of learning concrete construction in general have not met the targets based on the expectations required to obtain quality resources and meet the requirements needed as building experts. In this study, the researchers therefore consider that it needs to conduct research on the concrete construction learning outcomes of the Civil Engineering faculty related to the achievement motivation and cognitive style.

LITERATURE REVIEW

Concrete Construction Learning Outcomes

At the Faculty of Engineering, Civil Engineering Program, concrete structure planning is included in the Concrete Structures course. Meanwhile, the material for planning the composition of the concrete mixing (mix design), the implementation of making concrete, and evaluating the quality of concrete are inserted in the concrete technology which is united in the Knowledge and Testing of Building Materials course. The concrete materials require special requirements, so knowledge and testing of concrete materials are included in the scope of concrete technology knowledge.

Concrete technology knowledge is the knowledge and testing of concrete materials, planning the composition of the concrete mixing (mix design), the implementation of making concrete, and evaluating the quality of concrete.

Concrete technology knowledge is knowledge that includes (1) materials for concrete, such as cement, fine aggregate/sand, coarse aggregate/gravel, and additional materials for concrete. (2) Concrete, including concrete mixing, water cement factor, and bleeding. (3) Concrete mixing design (mix design). (4) The implementation of making concrete, which includes how to measure, how to determine water, how to mix/stir, how to measure workability, how to transport, how to create, how to compact, and how to treat/maintain. (5) Evaluation/control of concrete quality, for fresh concrete and hard concrete.

Based on the explanation above, the learning outcome of concrete construction is knowledge of concrete technology that affects the ability to make concrete, where to get good quality concrete, all activity steps of making concrete must be done correctly and carried out by professional workers who have the ability to make good concrete.

Learning Motivation

The most important motivation for educational psychology is an achievement motivation, where a person tends to strive for success or choose an activity that leads to the goal of success or failure. Murray, in Robert C. Beck book (1989) defines the achievement motivation as: "a desire or tendency to overcome obstacles, to exercise power, to strive to do something difficult as well and as quickly as possible". Meanwhile, Weber (1990) in The Psychology, of Learning and Instruction.

Meanwhile, Dececco and Crawford (1977) define achievement motivation as "The Expectancy of finding satisfaction in mastering challenging and difficult performances."

So, achievement motivation is a self-courage to always improve or maintain the ability as high as possible in all activities by using a standard of excellence. Achievement motivation is stable, where satisfaction is achieved with efforts to achieve a perfect and satisfying level (Clelland, 1989)

People who have high achievement motivation in this study categorize to have the following characteristics (1) have job satisfaction, so that they study hard, like to work, in every activity they try to work as well as possible. (2) Prefer challenging and creative work. (3) Always try to perform better than the previous performance. (4) Like competition. (5) Like vocational work. (6) Feel happy with the work feedback.

The characteristics as mentioned above are very suitable if owned by people who work on concrete, because concrete work requires people who are really hard at work and always try to work as well as possible. Concrete work is also quite challenging because there are problems that need to solve immediately with a limited time; Concrete work cannot be done casually, because the concrete must be completely compacted before the cement binds. Concrete work is a vocational job that is one of the jobs favored by people who have high achievement motivation. In this work, feedback is carried out continuously, so that the result has a quality based on the planned concrete quality. Therefore, the achievement motivation is very much needed in concrete work. Concrete work that is done carelessly without any worker's achievement motivation will produce poor concrete quality.

Achievement motivation is a self-courage to always improve or maintain the ability as high as possible in all activities by using a standard of excellence. Thus, achievement motivation can affect the ability to make concrete.

Cognitive Style

Cognitive style is a picture of habit that is relative permanent in individuals in terms of receiving, processing, and storing information that conceptually provides characteristics to receive, remember, think and solve problems, and make decisions.

Conceptually, the style term is focused on cognitive style which is closely related to the learning styles. Cognitive style is defined as individual consistency in terms of perception, memory, thoughts, and actions, which are field-independent and field-dependent. Learning style is defined as a consistent orientation in terms of learning, for example learning understanding and learning operations (Entwistle, 1983).

In line with that, Klausmeier (1994) said that cognitive style is a sub-has of learning style. The difference between the two terms lies in their focus. The focus of cognitive style lies in controlling the cognitive process, while the learning style focuses on controlling the learning strategies and knowledge

acquisition. In this study, the characteristics of individuals or students are only seen based on the description of cognitive styles that are field-independent and field-dependent.

The term of cognitive style has a meaning that refers to self-consistency that provides a constant description of individual differences in terms of organization and cognitive function. In addition, cognitive style also refers to how the individual receive and organize surrounding information (Woolfolk, 1991).

Furthermore, Witkin as quoted by Suhardjon (1994) states that Cognitive style is a picture of habit that is relative permanent in individuals in terms of receiving, processing, and storing information that conceptually provides characteristics to receive, remember, think and solve problems, and make decisions. Then it reflects constantly on the information process that develops in pleasant ways based on personality symptoms.

Messick and Goodenough (1994) state that cognitive style provides consistent individual differences in ways of organizing or processing information and experiences.

Furthermore, Witkin and Goodenough state that cognitive style in general is related a general picture of organizing and controlling attention, desires, ideas, and behaviors that bridge the functions of the cognitive, affective, and social domains. A person who has a Field-independent cognitive style is categorized as a person who has good analysis, who behaves always refers to himself with an impersonal orientation. In contrast, people who have a Field-Dependent cognitive style are categorized as someone who can think globally, behave sensitively toward the social environment and interpersonally oriented (Witkin, Goodenough, 1991).

METHOD

Population dan Sample

Variabel yang digunakan peneliti adalah hasil belajar konstruksi beton,pengaruh motivasi berprestasi dan gaya kognitif terhadap minat belajar mahasiswa belajar konstruksi beton.Berdasarkan variabel yang digunakan, sampel dalam penelitian ini sesuai dengan pendapat yang dikemukakan oleh (Kurniawan, 2014).

Data Collection Technique

This research uses survey method through correlational technique approach or correlation analysis method. Research data were collected by selecting a sample in the population, where the categories used in the achievement motivation instrument were as follows: 1) Always, 2) Sometimes, 3) Never, 4) Often, and 5) Rarely.

Variables Research

In this study, researchers used 3 (three) independent variables, namely: learning outcomes of concrete construction, the influence of achievement motivation and cognitive style

Teknik Analisis Data

This research used survey method through correlational technique approach or correlation analysis method. The data were collected by selecting the population sample. The target population in this study were students of the Faculty of Engineering, Civil Engineering Program, Semester V, totaling 30 students at the University in Bekasi - West Java, and had passed the concrete construction course. The research sample was 18 students who were selected using simple random sampling technique. The collection of data used by using an instrument in the form of a questionnaire that has been tested. The data analysis used for this research is descriptive

RESULT AND DISCUSSION

The Relationship between Achievement Motivation and Learning Outcomes

Based on the calculation result of relationship pattern between two variables stated by the equation $\hat{Y} = - 14{,}136 + 0{,}228X_1$ it can be interpreted that if achievement motivation (X_1) and learning outcome (Y)

are measured using the instrument used in this study, then any one unit increasing score on the learning outcome will be followed by an increase of learning motivation score of 0.226 units in the same direction with a constant (intercept) of -14.136.
To find out the close relationship between achievement motivation and learning outcomes partially. Calculation of the partial correlation coefficient obtained by learning outcomes and achievement motivation when controlling the cognitive style variables is (r_{y12})= 0,697. The significance test of the partial correlation coefficient was carried out with the t-test, namely t_{hitung}= 3,256. After controlling cognitive style variables, it shows that the relationship between achievement motivation and learning outcomes is still positive and significant at the level of α = 0,05.

From the test results above, it can be interpreted that if the cognitive style variable is controlled, the achievement motivation has a positive and very significant relationship with learning outcomes.

Tabel 1:Test Results Significant Correlation Coefficient between Achievement Motivation (X1) and Learning Outcomes (Y)

Dk	Simple Correlation Coefficient	tcount	ttable	
			α =0,05	α =0,01
16	r_{y1} = 0,759	4.663 **)	1,746	2,583

** very significant (tcount = 4.663 > ttable = 1.746)
Description: dk = degrees of freedom

Relationship between Cognitive Style and Learning Outcomes
Based on the calculation result of relationship pattern between two variables stated by the equation $\hat{Y}$=-2,686+0,916X_2 it can be interpreted that if the cognitive style (X_2) and learning outcome (Y) are measured using the instrument used in this study, then any one unit increasing score on the learning outcome will be followed by an increase of cognitive style score of 0,916 units in the same direction with a constant (intercept) of -2,686.

To find out the close relationship between cognitive style and learning outcomes partially. Calculation of the partial correlation coefficient obtained by learning outcomes and cognitive style when controlling the achievement motivation variables is (r_{y21}) = 0,635. The significance test of the partial correlation coefficient was carried out with the t-test, namely t_{hitung}= 3,065. After controlling achievement motivation variables, it shows that the relationship between cognitive style and learning outcomes is still positive and significant at the level of α = 0,05.

From the test results above, it can be interpreted that if the achievement motivation variable is controlled, the cognitive style has a positive and very significant relationship with learning outcomes.

Tabel 2: Test Results Significant Correlation Coefficient between Cognitive Style (12) and Learning Outcomes (Y)

Dk	Simple Correlation Coefficient	tcount	ttable	
			α =0,05	α =0,01
16	r_{y1} = 0,635	3.288 **)	1,746	2,583

** very significant (tcount = 3,288 > ttable = 1,746)
Description: dk = degrees of freedom

The Relationship between Achievement Motivation and Cognitive Style and Learning Outcomes

Based on the calculation result of the relationship pattern between achievement motivation and cognitive style and school effectiveness, it is expressed by the equation $\hat{Y}$=-16,283+0,550X_1+0.180X_2. The strength of the relationship between the variables of achievement motivation and cognitive style and learning outcomes is shown by multiple correlation coefficients $R_{y12=}$ 0,834. To determine the degree of significance and linearity of the regression, It performs the F-test. (F_{itung} = 17,123 >F_{tabel} = 3,96) on α = 0,05. The coefficient of determination between achievement motivation and cognitive style on learning outcomes can be obtained R^2_{y12}= 0,695. correlation coefficient between achievement motivation and cognitive style and significant learning outcomes. So, the research hypothesis is that there is a positive relationship between learning motivation and cognitive style and learning outcomes.

Tabel 3: Test Results Significant Correlation Coefficient between Achievement Motivation (X1) and Cognitive Style (X2) and Learning Outcomes (Y)

Dk	Multiple Correlation Coefficient	Fcount	Ftable α =0,05
17	r_{y12} = 0,834	17,123**)	8,40

** very significant (Fcount = 17.123 > Ftable = 8.40)

Description: dk = degrees of freedo

CONCLUSION

From the discussion it can conclude There is a positive relationship between achievement motivation and learning outcomes, There is a positive relationship between cognitive style and learning outcomes. There is a positive relationship between achievement motivation and cognitive style and learning outcomes. So Teachers as designers and managers of learning in concrete construction courses should be able to create a learning process that can continuously foster student's achievement motivation and cognitive style and the need for a consistent attitude in their implementation as an effort to improve learning outcomes. For other researchers, it can be used as reference material in the context of further research related to learning outcomes so that it can encourage the development of better quality education in the future.

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