

Students Perception to Course Work Effectiveness for Enhancing of Mechanic Subject in Civil Engineering Department Universitas Andalas

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ABSTRACT

Mechanics is known as one of the most difficult subjects for engineering students, especially in civil engineering department. However, this subject is the core of the students to become a good engineer in the future. Therefore, the lectures or team teaching usually are trying so hard to explore their ability in order to make the students understand the lesson. One of the strategies is by giving the students so many course works so that they will be using their time to do exercise and home works. In this research, a study is conducted to gain a perspective of the effectiveness of the method in giving the students so many course works. Three levels of questionnaire are conducted to obtain the perspectives and ideas from students, lecturers' assistances, and from the lecturers. The results of the questionnaire then are analyzed to gain the resume. Conclusion of the study shows that the course works are still giving a positive impact to understand the material of the subject.

Keywords: *Mechanics Subject, Course works, Effectiveness*

1. INTRODUCTION

Mechanics subjects is often becoming as one of the most uneasy subject for undergraduate to understand. Basically this is because the students do not have a standard level of physics and math in their high school period. Meanwhile, mechanics are the most core subject of the students to be an engineer or to be able to get the degree of their undergraduate study. Because of that, the tutors or the lecturers in their team teaching always try so hard to maintain the subject delivery so that the students can understand the material. One method used is to assign a series of tasks that students have to do within a certain range of time. Usually team teaching provides several senior students to help their junior to complete the tasks.

When assignments are not taught or are not taught explicitly, students lose out on the academic and intellectual experiences that assignments offer. If assignments are not of high quality and are not relevant to the curriculum, then learning will also be of low quality and loosely connected to the curriculum, if at all. Teaching and learning constitute a reciprocal process. Ineffective instruction is often distinguished by a loosely regulated plan, and students spend classroom time going through the motions of learning but not producing solid evidence of that learning. In these classrooms, the purpose for doing activities is lost, and learning loses

energy and meaning. To coin a phrase, a lesson without an assignment is a lot like a carriage with no horse and no place to go. In contrast, a well-crafted assignment ensures that instruction will provide students with a goal and the power to get there, enabling them to engage in rigorous and interesting academic contexts as they acquire the content and skills necessary to participate in academic coursework. Most important, assignments create teaching and learning opportunities to think and learn about ideas, topics, events, and questions—about specific content in the curriculum. This is why a quality assignment is the hallmark of effective instruction [1,2].

A series of projects is given to the students in order to force them understand the material by doing many exercises and practicing the theory in solving the problems. This is called 'tugas besar' in bahasa, or course works. They have to solve the problems one by one in certain time, and must discuss and present solves to the assistance of the lecturer who must be their senior or their colleague. The assistances of the lecturer are chosen by conducting test and interview.

This research is conducted by considering the above conditions. Since the department has accepted relatively a big amount of parents' complaining, it needs to re- think again about this kind of assignments. For lecturers or tutors who have guided the students in the class, it is a compulsory assignment

and giving this kind of assignment is a must. They often give statements that it is hard for the students to understand the lesson without having that course works. In addition, the seniors who have assisted the students will also give a positive impact for both students and their senior because all of them will discuss and solve the problem together.

2. METHODS

As previously mentioned, this study is conducted in order to obtain the level of the urgency of tugas besar or course works as a part of final mark of the students. Therefore, the method used in the research is by spreading some questions to the participants of the subject relating to their ideas and thought about the assignments. It is hoped that the participants give a proper answer so that the results will be relatively valid.

In this research, method is conducted by doing questionnaire to the students to get their perspectives of the course works itself. How the questionnaire is constructed can be seen from the chart below

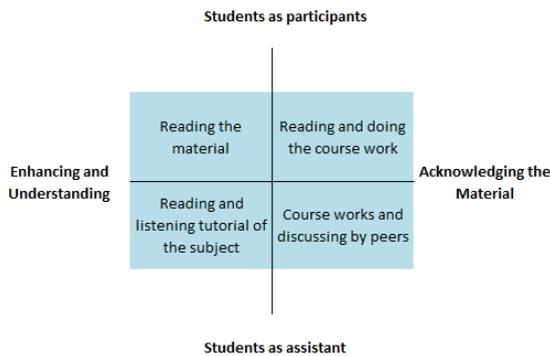


Figure 1 The role of the students as participants

From the chart above, it can be seen that there are several activities can be done by the students in order to get good understanding about the material. Those are: just reading the material, reading and doing the course works, doing course works and discussing by peers, and by reading and listening the tutorial of the subject.

Reading the material can be applied by finding a good book references via internet or bookshops. Usually in the beginning of semester, the lecturers or the tutor have already made a list of reference books, and ask the students to read and understand the subjects. Listening the material also can be done by searching in the internet about the subject, since there are lots of explanations and description of the subject in the media such as youtube, video, or others. Meanwhile, for doing course works and discussing with peers are only available by accepting the assignments as before.

To obtain the relative comprehensive thoughts and

ideas of the students about that, a questionnaire should be conducted. The figure below describes the questionnaire that has been spread to the students. It is applied by using googleform format, and asks the students to fulfil and answer the question. There are about ten questions and all of them should be answered by the students. The questions are more about how they think about the task, do they more understand after doing the task, and their obstacles while doing the task.

Questionnaire is also conducted for senior students who have been participating as assistance of the lecture. The number of participating is 13 senior from 14 students or about 93%. The questions for senior are also almost similar to the previous one, more about their ideas to make the lessons become more understandable to the students.

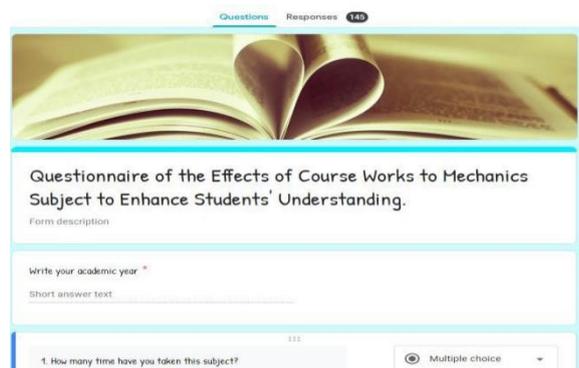


Figure 2 The questionnaire for students



Figure 3 The questionnaire for senior students

The above figure describes the questionnaire that has been spread off to the senior students. There are about 14 senior students who have been participating as lecturers' assistances. The students have been selected by lecturers who teach the subjects. Selections are conducted by observing their final marks in the mechanic subjects and also by testing their understanding about the subject. They have to answer several questions. A kind of interviews also is done to see the psychology of the senior students.

3. RESULTS AND DISCUSSION

After spreading the questionnaire to the students, the results are detected as follow. The questionnaires are shared on 9th June 2020. It was shared on the whatsapp groups related to mechanics groups subjects.

Almost all students have a positive mind (blue colour) about the course-works because 84.1% or 122 students think that the course-works indeed helps them in enhancing mechanic subject understanding. 7,6% or 11 students state that they do not think that the assignment has contributed to their understanding about the subject. The rest (yellow colour) or about 8.3%, 12 persons, cannot decided whether the assignment has helped them or not. The graph about that description can be seen from the figure below.

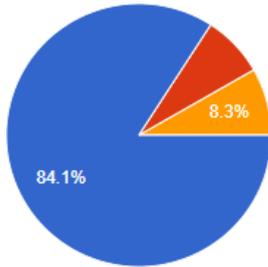


Figure 4 Course works contribution in enhancing subject understanding.

The graph below is explaining the frequency of the students to discuss the course works with their senior. It can be seen from the graph that more than 50% of the students are not often to share and discuss about the assignments to their senior (yellow colour).

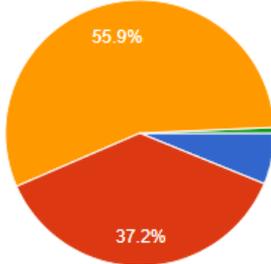


Figure 5 Students frequency to discuss the course work with their senior

Only 9 students or about 6.2% stated that they were often discussing the problem with the senior. One student said that he or she did not need assist from senior in finishing his or her assignments. Necessity to discuss the problem with the seniors to ask helps is not demanding, to tell the truth. However, it depends on the student itself to acknowledge his or her needs relating to the subject. By reading all the materials comprehensively is actually able to increase the understanding of the student about the material.

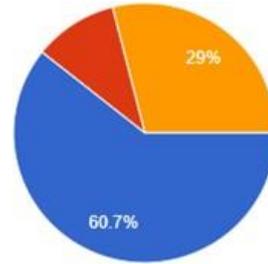


Figure 6 Students opinion about urgency of the coursework.

Figure 6 above is describing the opinions of the students relating the urgency of the course works. Most of the students agree to say that this type of assignment should be continued to be applied in the curricula. It means they admit that this assignment helps or encourages them to study more about the subject. Eighty eight students or 57.2% of them stated that this assignment is compulsory and should be acknowledged properly.

Forty two students or 29% among them suggest changing the format of the assignment to become not compulsory. The reason of this is perhaps they have difficulties in managing the time due to many assignments to be conducted, yet realise that this type of assignment is very useful for them for understanding the subject. Among the 145 students, 15 of them or 14.2 percent of the students disagree to recommend the kind of assignment to be re- applied in the next year.

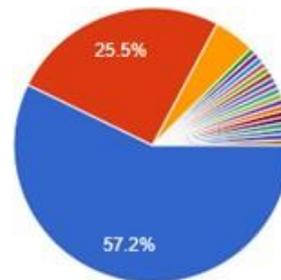


Figure 7 Obstacles of the students in conducting the course work.

This questionnaire also provides students opinions relating to the obstacles they have in finishing this assignment. Figure 7 reveal the obstacles students have. 57.2% of them said that they do not understand the material, and 25% of them stated that they cannot arrange time properly in order to be able to finish the assignments. The rests declaring that the obstacles are: troubles with the senior, they do not study harder, not understanding the concepts of the subjects, covid 19

outbreak, and online learning is not conducive.

To be honest, just giving any assignment admittedly will not improve achievement, but well-crafted assignments hold the potential to make learning and teaching more focused and relevant because in the crafting process teachers must be deliberate and highly aware of the context, content, and charge involved in an assignment. Implementing well-crafted assignments is worth the effort.

As teachers analyzed what was learned and taught in this task, it became clear that the task asked students to spend more time on creating borders and lettering for their covers than on analyzing the themes and characters in the book [3].

Mechanics in civil engineering are a series of subjects that studying about forces, internal and external reaction of the structure when loads come across it. In Universitas Andalas, the mechanics consist of five subjects namely: Mechanic 1, Mechanic 2, Mechanic 3, Mechanic 4 and Vibration. These subjects are related to each other so that if the previous could not be understood by the students, so he or she will have difficulties to understand the next level of mechanic. And usually its contribution to the final mark is relatively high. For example, the final marks should consist around 20% from the course works.

Since civil engineering was founded in Universitas Andalas in 1985, 'tugas besar' has been practiced. Basically many subjects in civil engineering have this type of assignment. As a consequence, time for doing these assignments is very large. The students should adjust their time properly in order to make they can do other assignments or preparing for quiz and exams. Sometimes this condition is not accepted by the parents of the students because the students usually spend their time a lot in their basecamp, or their friends' house, or in campus itself. Due to massive assignments, the students are going home late until midnight. That is the reason why for sometimes the parents of the students complain the department about this because worried of their children's safety.

Homework is generally used as a learning resource for educational activities. It provides students opportunities to improve their learning habits, learning performance, and aims to increase their academic achievements. However, students view homework differently according to their educational levels, beliefs, attitudes, and cultures. Tsai and Jiang [5] have conducted a study on students' perceptions on homework between Chinese and American third grade students. Results revealed that the Chinese students received more homework and enjoyed doing them more than American students. They also preferred to compete homework by themselves rather than with the helps from the others when compared to American students.

For this kind of assignment, most students agree and only a limited number is not suitable of the method. The un-agree students usually feel that they have do not much time, or they cannot do the assignments because they do not understand the material. It means, they do not the concepts of the subject, and this is can be caused by lack of understanding the concepts of Mechanic 1 and 2. As previously mentioned, these subjects are a series of mechanic 1 to 4 and also related to subject Vibration. Therefore, if they do not have a good basic of mechanic 1 or 2, they also will have difficulties in understanding and conducting tasks in mechanic 3.

Having a good of assistance is also a key to make the students feel positive and keen to do the assignments. One of the questionnaire results are the bad relationship to the assistance yield a negative effect to the students. Therefore, choosing a good assistance is a priority to be evaluated in the future [4].

One of students complains are that they have difficulties in arranging time. The strategy to do with this is to rethink about assignments schedule. Lecturers should maintain a good time schedule so that the assignments from other subjects will not have a same final collecting time.

4. CONCLUSION

Assignments are excellent vehicles to prepare students for the routines and demands of college work. Undergraduate students who learn how to write arguments response to reading, for example, will clearly be better prepared than those who fill out worksheets or produce cut- and-paste research papers. In the process they can build a strong grade point average that is academically meaningful.

Effective teaching sets high expectations. When assignments are aligned to high expectations, students are challenged no matter what skill sets or content background they bring into courses [4,6]

Relating to the results of this research, it can say that the assignment is quite useful in enhancing the understanding of the participants. Almost students agree that the task is improving their knowledge about the subject. Figures and tables should be placed either at the top or bottom of the page and close to the text referring to them if possible.

ACKNOWLEDGMENTS

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REFERENCES

- [1] S. F. Nemser, From preparation to practice: designing a continuum to strengthen and sustain teaching, *Teachers College Record*, 2001, 103 (6), pp. 1013–1055.
- [2] P. Hirst, and R. Peters, *The Logic of Education*, 1970, Routledge, London, 1970
- [3] S. Elrod, D. Husic, J. Kinzie, Research and discovery across the curriculum. *Peer Review*, 2010, 12(2) 4-8.
- [4] C. Bereiter, M. Scardamalia, Education for the knowledge age: Design-centered models of teaching and instruction. In P. A. Alexander & P. H. Winne (Eds.), *Handbook of educational psychology*, 2006, pp. 695-713. Mahwah, NJ: Lawrence Erlbaum
- [5] K. C. Tsai, H. Y. Jiang, Chinese and American Third Grade Students' Perceptions of Homework. *International Journal of Economy, Management and Social Sciences*, 2013, 2(6), 212 -216.
- [6] E. Dougherty, *Assignments Matter*, 2012 ASCD, US