



STRATEGIES TO COMPLETED THE STUDENT'S THESIS OF MECHANICAL ENGINEERING EDUCATION THROUGH THE FINAL PREPARATION PERIOD PROGRAM (FP3)

Samidjo¹, Pairun Roniwijaya², Bayu Rahmat Setiadi³

¹²³Mechanical Engineering Education, University of Sarjanawiyata Tamansiswa
Email: ¹samijompust@yahoo.com, ³bayursetiadi@gmail.com

KEYWORDS

Student's thesis
The Final Preparation Period Program
FP3
Graduate on time

ABSTRACT

The final preparation project program (FP3) is a strategy used by University of Sarjanawiyata Tamansiswa (UST) in giving students graduation opportunities on time. This program is for final year students. Research focus on the preparedness of final assignment both from the determination of research topics, research methods used, site selection research, preparation of research reports, guidance, and others. The study used a qualitative approach with key informants of 33 UST students who took FP3. The results show that the usefulness of FP3 is very meaningful for the students because they get comprehensive information in qualified research procedures and strategies to graduate on time.

INTRODUCTION

The final assignment for students is a course that must be taken and must pass to end the educational program in a ladder that is being lived. The final project, according to the level of the program, for the students of strata 1 program is a thesis writing (TW) or a non-thesis writing (NTW). For stratum level 1, many students who can complete this final project well. The time given one semester can be put to good use. However, not a few students are facing obstacles and experiencing difficulties, so forced to delay the settlement that affects the delay of graduation. Likewise, the 8th semester students of Mechanical Engineering Education Program of JPTK FKIP UST also have to make scientific paper of final task to end their study at the level of strata 1. According to the curriculum, the time given to complete the scientific work is one semester and allocated the time in the 8th semester. However, if it turns out that in one semester students can not complete the thesis, then it should be done by extending the time by re-writing thesis writing in the next semester.

The delay in completion of the final project for students is not only a problem for the students, but also a problem that must be managed and looked for by the study program and institution. If many students are experiencing difficulties in completing the final and protracted tasks, then the impact on the low level of institutional productivity. The subsequent impact of low productivity will also affect the efforts to increase the accreditation of study programs where productivity is one of the components assessed in the accreditation form of the National Accreditation Board of Higher Education (BAN PT).

The low productivity of graduation is a problem that must be handled properly in order to institutionally remain in high category, but on the other hand the institution must also be able to ensure that the work and completion of the final task of the students must be through the ways in accordance with the provisions and not violate the ethics scholarship. Students should be able to settle their final assignment through appropriate academic processes, not in ways that are not in accordance with academic standards applicable to higher education institutions that should prioritize honesty, integrity, and scientific values and generally applicable moral values. Students must be able to complete the thesis correctly under the guidance of lecturers assigned by the study program, not using the services of making thesis as much reported in mass media (Kompas, 2016, p.6).

Therefore the institution is very concerned to ensure that students complete the final task by going through a good process, timely and appropriate quality. To overcome the delay or delay of completion in writing the final

project of scientific work, to the students of the 8th academic year of 2015/2016 academic year, this effort is made by allocating the time and activities called The Final Project Preparation Program (FP3). This program is conducted with the aim to provide assistance to students early before the students determine the title of the script by way of determining the mentor first. The Management of FP3 at the level of the study program begins by collecting all the students by the chairperson with the secretary of the study program who is expected to take the final course of the semester, which is the 8th semester. To the students are given general explanation about the thesis and provisions applicable in the writing of this scientific paper, as well as the students are encouraged and motivated to immediately determine the title that if attention to be used as a scientific work as their final project.

This research is intended to obtain a description of the strategies undertaken or pursued by the students in responding and utilizing the opportunities pursued by the study program in completing the final task, as well as various obstacles encountered, as well as efforts to overcome these obstacles.

LITERATURE REVIEW

Writing scientific papers is one of the main characteristics of the activities undertaken by universities. Scientific work is written or otherwise recognized in the field of science, technology or art written or done according to scientific ordinances, and follows agreed scientific conventions (UM, 2000, p.1). Through this scientific work members of the academic community can communicate, ideas, studies or results of study, as well as research results to the public. For students who will end their studies at a level, the scientific work is a proof of the mastery of the field of science that perserved, as well as a proof of ability to communicate, ideas, or research results have been done.

Scientific authors must adhere to the code of conduct prevailing in the scientific community. Authors of scientific papers should avoid the act of cheating that is commonly called plagiarism, which is acts of fraud committed by writers of scientific papers in the form of writing, or the thoughts of others who claimed as writing or the results of his own thoughts.

Code of ethics is a set of norms that must be given attention by the authors in producing scientific papers. Although not set forth in the guidelines of the final assignment issued by a particular educational institution that produces scientific works, but there is a general norm prevailing among scientists who must be followed and obeyed. The norm is defined as a set of rules or rules used as a benchmark for judging something (Bertens, 2007, p.148). In regard to the writing of scientific papers, the norm is defined as a set of rules or rules to assess the results of scientific papers produced by a person. While in relation to the writing of the final assignment done by the students, the definition of norm is the scientific norm which is a set of rules used to assess the writing result of the final assignment of the students as one of the requirements to terminate their study (UM, 2000, p.5).

In producing scientific papers, the author must honestly mention or include references or sources of material or thoughts derived from other sources, which are the property or other thoughts of others so as not to be considered the perpetrators of theft belonging to others (UM, 2000, p.5). By code of ethics does not mean to prohibit authors to borrow, take, or use materials, opinions, or other people's thoughts, which in fact all this is inevitable, even recommended. However, the retrieval, use of materials, thoughts, opinions of other sources, authors should specify the source. In the same way, if the author of a scientific paper uses drawings, charts, models, instruments, and other materials, which are not the author's own ideas, ideas, opinions, ideas or designs, and taken from other sources or the possession of the author or any other person, the author should mention the source, even if it is possible to request permission from the source to use the materials.

The writing of scientific papers by students is also required to be the original written works of the students themselves, which is done under the guidance of lecturers assigned by the authorities in certain college environments. To guarantee the authenticity that the thesis as one of the scientific work of the students, every thesis scholarly work must be accompanied by a stamped statement signed by the student of the author, stating that the scientific work (such as thesis) is the work of the students themselves. The statement clearly stipulates that if it is later proved that the student's writing is the result of the acquisition of the property or the work of another person or writer, the writer of shall be responsible and willing to accept the sanction in accordance with the applicable provisions (TA Writing Manual, 2010, p.Appendix II).

There are two important issues that should be avoided and not done by students in the writing of scientific papers as the final task. First, the process of writing scientific papers should be done by students themselves, in the sense of not being made by others or other parties. Of course authors can use the power of others as helpers, such as spreading a questionnaire or taking a questionnaire, helping to type, and the like, but the standard scientific processes must be done solely by students of thesis writers. And the second problem is that the writings of the scientific papers made are not the result of plagiarism as mentioned above, either partially or more fully or wholly.

RESEARCH METHODS

This research uses qualitative approach. The study was conducted for six months. The subjects in this study are students of mechanical engineering education courses 8th semester academic year 2015/2016 who is writing thesis scientific papers as the final assignment subject. The sample is a purposive sample. To fulfill the adequacy of data and representation of data pursued by applying the strategy snowball sampling, ie the retrieval of the subject continues to be achieved until the data credibility is achieved, which is marked by saturation of data. The key informant in this research is the student who is preparing the final task of FP3, while the key instrument is the researcher himself. The research data was collected by interview, observation and documentation method, and analyzed inductively.

RESULTS AND DISCUSSION

Strategy of choosing the type of final task

The findings of this research indicate that the students of mechanical engineering study program that take the final assignment subjects are programmed with the final preparation period (FP3) of 85 people, all take the final task of the type of thesis (TAS) and no one takes the final project is not thesis (TABS), for example the final assignment in the form of academic narrative about the work of art creation and technology products. The selection of this final type of task becomes part of the student strategy to end the study so as not to linger. Until the end of the semester even the academic year 2015/2016, students who apply for the exam and who have thesis exams there are 33 students from 85 students of FP3. In addition to regular students there are still other students who are writing scientific papers, but not within the scope of the FP3.

Strategy of Selecting Research Topics

Students have been careful about the topic of their research since following the 1 (one) vocational school apprenticeship held in the 5th semester (5) at VHS where the students observed the teacher in teaching to get an idea of the curriculum or learning materials presented by the teacher in teaching subjects, primarily on the learning of productive subjects. The discovery of the problem at the time of this observation requires the sensitivity of the students as observers about the learning process is not good. For example, students who are studying are not enthusiastic, not involved in the learning process, or students less active in the learning process. According to the students, while following the lesson students do not pay attention to teachers, tend to move on their own, passive and not excited. The following student statements related to the selection of thesis topics:

'I chose the title of classroom action research when I was doing an apprentice program 1. When I was observing the subject teachers who were doing the learning process, I then observed that the students were not too involved in the learning activities. Then I consider the situation as a problem (I: St.1)

The other students stated the same thing relative to his statement as follows:

'My thesis studies classroom action. the title of the study I have chosen since I made observations at the time of apprentice 1 (one) in VHS (vocational high school). At that time, I watched the students taught the teacher in the practice room for the car ac subjects. But the students are not eager to attend the lessons because the teacher explains in a lecture, when in fact the subject is a practice. Then I talked to my friends who were also apprentices in other VHS (high school vocational) what was suitable for teaching ac practice, and other friends were also interested in doing classroom action research with other subjects. thinking might be better taught by demonstration method, then I meet friends to talk about and my friends also have the same plan '. (I: St.2)

As with the characteristics of classroom action research, the problem of classroom action research is a real problem in classroom learning faced by teachers. When asked the question about the meaning of classroom action research (PTK), the student expressed his opinion as follows:

'PTK it's research whose purpose is to improve student's learning achievement. There are some of my friends who are also doing action research (meaning classroom action research), but different from school. I'm with friends often talking about each of us and helping each other. I have six people in a boarding house, all of them are PTK (classroom action research). So there are friends who do the same research. (I: St.3)

The selection of classroom action research for students is also part of an effort to cooperate with other students, and thus there is a purpose to be able to finish and pass simultaneously. The students' understanding of

the purpose of classroom action research is sufficient, and other informants who demonstrate a good understanding of classroom action research, saying as follows.

'The classroom action research results cannot be used (meaning applied) in other schools, so this is a special study (that is specific to the subject, and for that class)'. (I: St.3)

Strategies for Selecting Research Sites

Choosing a location or place of research is one that also becomes a consideration in doing the final task to be carried out smoothly, not constrained in the implementation of research, which ultimately is expected not to inhibit graduation. The selection of research sites in an effort to conduct thesis research of the students who are targeted by the MPTA program can be grouped into two groups, namely groups of students who choose class action research and group of students who choose ex post facto research. Students who choose classroom action research generally choose the research location in vocational school where students do internships 1. Meanwhile, students who do ex-post facto type research generally take the research location in the vocational school from which the students come from. The following are considerations regarding the selection of the study sites when asked why they chose the research sites in their schools to go to high school.

'I choose research in my school because I already know the father of the principal, I know many teachers, so I got the ease of finding a research permit, whereas if the research here I do not know the principal. My friend's research is also in the former school (where students come from when in high school), and is allowed, so there are friends'. (I: St.4)

After being confirmed with other students mentioned by the students, both of them are from the same area, but different from the school. It is also a good idea to have research students in a vocational school in their area or in their home school, since they have the ease of administering research permits, and if most students have to study in vocational high schools in Yogyakarta, vocational high schools to provide opportunities for prospective teachers for research, and may be very disruptive to academic schedules in the descent schools that are the subject of research. With this student strategy then the students are also more fluent, not queuing for the turn of research in the school that became the research area. Similarly, another student's statement about the research scene he chose:

'My research at school I used to pack, because I know the principal, so I easily obtain a research permit. But beforehand I asked for oral permission to the principal, and allowed, then I research there '. (I: St.5)

These findings indicate that students studying in their own vocational secondary schools are a strategy for students to be more easily licensed, the possibility of using the school as a research arena is also high, and according to them it is sure to ensure fluency in conducting the research.

Work on writing research reports in groups.

Working in groups seems to be the strategy of students who are working on thesis. As the informants noted in the above quote, students work in groups not only at the time of study, but also in choosing a research topic, which then determine the choice of classroom action research or ex-post facto research. As stated by the following students:

'I research the correlation, but my friends there are many action research. I have 4 (four) students who often gather, but the correlation research there are 2 (two) people, and the two action research. But I am with friends who choose topic of classroom action research still often get together to talk our research, can help each other '. (I: St. 5)

However, when asked the question of the selection of the title / topic of correlation research, from which the original idea or initial idea of students choose correlation research, the following answers.

'I searched for the title of the study by looking at examples of research in the majors. I am interested in choosing correlation research because there are examples of proposals that I borrow from friends. Then I contacted my teacher and my former principal to ask permission for research, and was allowed, so I did my research at my own school (meaning the school from which the student came from)'. (I: St. 6)

The development becomes the proposal of thesis research done by the students at the time of studying the methodology of educational research (MPP), which is developed into a paper to fulfill the tasks in MPP course,

especially for understanding about population, sample, hypothesis formulation and also related to questions or problems. research problems, which are summarized in the formulation of research problems. Here's the exposure of students about the stages after finding the topic of research and further its development.

'When I already have a thesis topic, then when told to make the task of research methodology course then I make a paper. My other friends are so, so I'm not alone. I work also with my friends, discussing each other '. (I: St.4)

Making a task for one course associated with thesis is a student strategy to further strengthen research topics to be selected. By pouring in the paper as another course task, the student can get input to better understand and deepen the topic chosen, so get a complete picture of the scope of the selected problem. Here's another informant's exposure.

'The title of this thesis I had previously written as a task in the eyes of another kualiah, and at that time I was given inputs to fix it. I was also given a description of the difficulties in taking care of the permit, because my research was at my former school (meaning the origin of the student's school when in vocational school), because my school is a public school '(I: St.5)

After finding and selecting the topic of the problem at the time of apprenticeship 1 (one) student develops it into a paper to fulfill the task of MPP course. Furthermore, the paper was rewritten in a research proposal format and presented in the assignment of the course of writing scientific papers and seminars. In this presentation, students get input from other students, as well as from lecturers who are able to write scientific papers and seminars. Because the course of the writing of scientific papers and seminars is enlivened in semester 7 (seven), then in the next semester, the eighth semester (eight) students establish the topic of research with consultation and approval of the supervisors thesis.

Topics Thesis in Research

Inventory of thesis research title of student who is writing thesis final assignment (TAS) shows that most research is a classroom action research. The number of classroom action research is 23 of the total examinations before August 18, 2016, or 69%, while the rest are ex-post-facto research with correlational research type, ie 9 (nine) of 33 students, or 27%, and comparative studies 1 (one) of thesis research 33, which is quasi experimental research.

Difficulties / obstacles in writing thesis

Students stated that to ask time for supervisor for guidance there is no obstacle, every request guidance to supervisor always be served until finish. As stated by the student when asked if there are any obstacles to consultation with supervisor, student statement as follows.

'I have never had difficulty meeting an instructor. I want to consult just sms or telephon, appoint with lecturers, and usually kept'. (I: St.5)

Students ask for lecturer guidance is not done regularly, or not scheduled regularly, for example every day what, what time, but student tends to contact lecturer after having problem in writing or have writing for guidance from lecturer. When asked the guidance routine, whether it is scheduled every day, or every day what, the student answers:

'In my guidance is not scheduled, so only when I have writing I asked the supervisor to meet for guidance, so it is not scheduled every day what'. (I: St.5)

However, difficulties are experienced by the supervisor. Because the FP3 is intended to accelerate the completion of the final assignment of students, whether they take the final thesis (TAS) or the final project is not the thesis (TABS), the lecturer feels the moral responsibility of the students' smoothness in completing their final assignment. But in the end the writing of thesis is very dependent on the students themselves. Students who want to complete the task eventually quickly should try with the effort to achieve the desired goal, but if the student does not have the intention to quickly finish, there is no willingness to write, and ultimately has no writing to be consulted, then the meeting with the counselor also there will not be much benefit.

The next problem is that the lecturer finds it difficult to contact the old student who never appeared for consultation, even if using a communication tool is not foreign to the student, but the student does not want to come. Even until the semester of thesis writing ended, many students who have never come to see a supervisor to

consult the proposal, or ask for consultation what difficulties are facing. Students who do not appear on campus tend to be more difficult to program in guiding the final task.

Another fact that can be important information is that each lecturer gets the assignment of mentoring more than 10 students of thesis writers, there are even lecturers who guide 18 students. This amount does not include previous guidance students who have not completed the thesis. Therefore, in general, this guidance task is not appropriate or exceeds the maximum limit as regulated in the accreditation form of universities (BAN PT), that each lecturer is only set to guide thesis / final assignment of at most 8 students. Supervising the writing of thesis or final assignment of 8 students each lecturer will give maximum score in accreditation assessment, that is score 4 (four).

As revealed in the findings of this research that most of the thesis research conducted by students in the MPTA program is a classroom action research. The selection of the research type is a topic selection strategy or topic by the students who find that this type of research is an easy research in finding the topic, and in the implementation of the research, and especially many sample research reports that can be accessed in the study program. Generally, students stated that the selected problem is the result of observation at the time of the student following the internship program 1. In the observation, the students found the condition and situation of inappropriate learning, the absence of a fun learning atmosphere, a tedious and monotonous learning, with a learning process dominated by teacher. The situation was captured by students as a problem and then raised to research.

The selection of classroom action research as done by the students who follow the FP3 program if done well can actually be one of the institute's efforts to overcome the quality of educators, who in recent times get the public spotlight because of the quality that still needs improvement. After the government allocated a large budget to improve the welfare of teachers through the provision of certification allowances, so that teachers do not need to work side to meet the needs of life, the welfare of teachers improved. Nevertheless, the results of research conducted by practitioners show that the increased welfare of teachers is not followed by improvements in performance.

Therefore, the selection of research type of class action as thesis research can be one effort to improve the ability for prospective teachers to master one of the methods of overcoming problems commonly found by teachers in the field in carrying out the task of learning. By mastering the correct method of finding a scientifically correct solution to the problems in the field, later on if they become teachers will become more sensitive in grasping the problem of learning, and can immediately take steps to seek a way out through scientific action, class. Classroom action research is a scientific method with the aim of finding ways or methods that can be applied to address learning problems specifically addressed by teachers in teaching certain subjects, or even specific topics or subjects. The results of classroom action research can only be inferred for the particular situation a teacher faces in a particular subject, subject or subject matter, and cannot be generalized to other subjects or subjects. The teacher should therefore understand that the results of research with the type of classroom research should not be used to teach or warm up learning problems on other objects, other situations, or other subjects, unless there is an assumption of similarity to the problem, and other characteristics.

CONCLUSION

1. Implementation of MPTA program for students shifted 8 (eight) mechanical engineering education year 2015/2016 shows all take final project type of thesis (TAS) and no one takes final task not thesis (TABS). The final assignment writer who can complete the writing of the thesis according to the programmed time reaches 38% in the MPTA program. The type of thesis research is 69% classroom action research (PTK) and the rest is an ex-post facto research type of correlation research, and there is one quasi-experiment type research.
2. Selection of TAS research topics that take the type of PTK done since the students made observations in implementing the apprentices 1, then developed into paper to fulfill the task of the subject of educational research methodology. While students who research ex-post facto election topics or research titles done by looking or thesis titles in the study program.
3. Selection of TAS research sites become part of the student strategy to complete the final project well, and on time. Students who take research type research class action research location is SMK in which students make observations for 1 (one) apprentices. The selection of research sites by students into consideration is that the students already know the teachers who have been observed, and the problem raised to the title of research is derived from observed teachers, on certain subjects and certain topics that have been observed. While the students who take the type of research ex-post facto research location take vocational high school origin of the students concerned, or return to the region of origin, with the consideration of students know the principal and teachers so easy to obtain a research permit.

4. Supervisors get the assignment of supervision exceeds the provisions as indicated in the accreditation form of the study program, which is a maximum of 8 (eight) students for each mentor, however the service to the students in the guidance is not disturbed. Students obtain good guidance services by supervisors, student requests for consultation can be served by counselors as requested by students requesting guidance.
5. Students working on thesis in groups, working with friends, as well as helping each other in doing data analysis, operating software data analysis program. This group work is not only done by students who live in Yogyakarta, but also for out-of-town students who happen to have some people who come from a region.

REFERENCES

- Bertens, K. (2007). *Etika*. Jakarta: Gramedia Pustaka Utama.
- Bogdan, R.C. & Biklen, S.K. (1992). *Qualitative Research for Education*. Needham Heights, MA: Allyn and Bacon.
- Borg, Walter R. & Gall, Meridith D. (1979). *Educational Research*. New York: Longman, Inc.
- Fakultas Keguruan dan Ilmu Pendidikan Univ. Sarjanawiyata Tamansiswa. (2010). *Pedoman Penulisan Tugas Akhir*. Yogyakarta: FKIP Sarjanawiyata Tamansiswa.
- Johanes Eka Priatna. (2016, March 18). Jalan Pintas Pendidikan. *Harian Kompas*, p. 16.
- Kerlinger, Fred N. (1986). *Foundation of Behavioral Research*. Third Edition. New York: Holt, Rinehart Winston, Inc.
- Kompas. (2016, October 19). Sekolah Menengah Kejuruan: Indonesia Kekurangan 91.861 Guru Produktif. *Harian Kompas*, p. 12.
- Kompas. (2016, September 21). Pendidikan Vokasi: SMK Kekurangan 90.000 Guru Produktif. *Harian Kompas*, p. 1.
- Sugiyono. (2007). *Metode Penelitian Pendidikan: Pendekatan Kuantitatif, Kualitatif dan R & D*. Bandung: Penerbit Alfabeta.
- Universitas Negeri Malang. (2000). *Pedoman Penulisan Karya Ilmiah. Skripsi, Tesis, Disertasi, Artikel, Makalah, Laporan Penelitian. Edisi Keempat*. Malang: Universitas Negeri Malang.