# Revolutionizing Master's Thesis Success: A Scientific Paper Mentoring Model

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**Abstract.** This research aims to develop a mentoring model and optimize the use of an E-Clinic Research System to help students overcome obstacles in compiling their scientific papers for their master's thesis. The study uses a quantitative approach and action research with three main stages: planning, implementation, and evaluation. The model assistance consists of analyzing participants' condition, making performance indicators, providing intensive assistance, conducting intensive assistance, and monitoring. The results indicate that the mentoring model is effective, producing scientific papers in various forms, including publications, scientific works, and draft scientific papers. The findings imply that the implementation of the mentoring model and E-Clinic Research System can significantly increase the efficiency and effectiveness of student and supervisor interaction in producing scientific work.

**Keywords:** Master's program · Scientific papers · Mentoring model · E-Clinic Research System · Action research

## 1 Introduction

College graduates according to their level are required to meet the specified qualifications. In accordance with the existing provisions in structuring the quality of higher education based on the leveling of graduate qualifications with the keywords there is a Specific Skill Formulation. At the Master's level or level 8, graduates must have the ability at level 8, namely developing science and technology through research, innovation and testing, solving problems with a multi-disciplinary approach. At level 8, a master's degree graduate has the obligation to carry out publications. In accordance with the Minister of Education and Culture Number 49 of 2014, it has revised that a master's graduate must compile a thesis or other equivalent form and upload it on the college website, as well as make scientific papers that are published in accredited scientific journals or accepted in international journals.


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Students of the master's program must have the will and ability to complete their study tasks in compiling a thesis and writing quality scientific papers. Students' abilities must also be supported by other aspects, especially an adequate curriculum and qualified teaching staff to encourage and accompany students to complete the task of compiling their thesis and scientific papers. Harmony between students, lecturers, and the existence of adequate curriculum tools will produce good performance for students in completing the task of compiling their thesis and writing scientific papers.

Students of the agribusiness master's program often have problems in completing the task of compiling a thesis and writing their scientific papers. Many of these obstacles are caused by several things, including:

1. Differences in educational background and student experience that are not closely related to the field of science they are engaged in or are less linear.
2. The habits and ability to write scientific papers are lacking because students have the habit of writing only for their administrative needs and institutional needs.
3. Students' study readiness is lacking and often suddenly continues their studies without careful planning.
4. Students' methodological ability is very lacking to carry out activities to compile theses and scientific papers because students have not carried out scientific activities for a very long time.

Students of the agribusiness master's program also have very strategic potential as agents of change if they have the ability to write scientifically. The potential of students can also be shown from several things, including;

1. Determination and high enthusiasm in completing studies seen from participation and activities during the learning process.
2. Orientation in participating in master's education, among others: to move up the ranks and to increase abilities.
3. The basic potential of a very strategic job with the knowledge and degrees obtained, experience shows that master's graduates have taken full advantage and occupied strategic positions in several positions as heads of services and other important positions.

## 2 Literature Review

### 2.1 Competence to Make Scientific Papers

Students as part of a scientific society must be able to present themselves in cognitive, affective, and psychomotor aspects, as well as abilities in oral and written. The ability of students in producing scientific papers must be maximized both through curriculum development and more intensive assistance [1] stated to carry out programmatic, directed, and sustainable academic supervision, and problem posting can be developed through development research by applying the way lesson studies work, namely Plan, Do, See (PDS) or in the concept of Total Quality Management is PDCA ( Plan, Do, Check, Act) which emphasizes continuous quality improvement with a clinical supervision approach.

E-Clinic Research is a system designed to provide space and publication more interactively through an online approach. The existence of a research E-clinic to meet the needs of students, lecturers, and managers in providing effective, efficient, and sustainable services. A thesis information system can facilitate and simplify the process and can streamline mentoring time [2].

Based on a survey by Cedelop European, the technology, information and communication (ICT) industry is the fastest growing industry. ICT actors must have a long commitment to continue learning. The need for talented human resources with hard skills and soft skills is very necessary in mastering ICT. Soft skills are needed, especially communication, analytical, leadership, and problem solving competencies [3]. In the world of mastery education, it is reflected how teachers can channel various information, insights, and knowledge through today's advanced technology. One of the lessons that can be transferred is how students are able to compile scientific papers properly. Understanding the purpose of the tool or understanding the message quickly, operating the tool with minimal intellectual effort, having a design that corresponds to abstract ideals, and understanding nature are examples of intellectual needs. Human beings show a strong intellectual desire for knowledge [4].

Design thinking is fundamental to a creative process driven by a particular problem and individual, as well as conventional or obvious solutions. The design-thinking process is framed, clarified, placed in perspective, and analyzed thoroughly. Components of design thinking can be studied, systematically characterized, and rationally combined into processes that produce effective and innovative solutions. There are 5 basic buildings to build design thinking, namely: Information collection, analysis and definition of problems, generation ideas, synthesis through modeling, and critical evaluation. With the important step of model testing, there is an opportunity to make a solution or project better; to validate (or not) concepts and solutions relative to the definition of the problem by making it a critical assessment of objective stakeholders, colleagues, and outsiders. Input from stakeholders is invaluable for making revisions. Accept constructive criticism from any source, make changes without weakening strong ideas, and test again [5].

### 2.2 Supporting Facilities

The research clinic is a training activity and assistance in writing articles with various research methods. To support research clinic activities for lecturers and students, what is needed is a supporting factor that includes lecturers, academic atmosphere, and other supporting facilities. The three of them must interact optimally so that it will provide comfort and smooth implementation of activities, especially students who will take part in mentoring.

Lecturers who are professional educators with the main task of transforming, developing, and disseminating science, technology, and art through education, research, and community service. This makes lecturers an important supporting factor for improvement, especially scientific work produced by students. One of them is related to the egalitarian principle between lecturers and students, which considers students as partners, there is no ambition for lecturers to dominate, students are given the opportunity to express opinions and discuss. According to [6] egalitarianism is a value that concerns man's position over himself and himself in the midst of other human beings. Therefore,

supporting factors in conducting research clinics in order to produce more research in national and international reputable journals require egalitarian lecturers who can guide and accompany students in compiling their scientific work.

The next supporting factor is the academic atmosphere that must be applied to each educational institution in all activities of educational institutions, students, lecturers, academic staff, and the campus environment can cooperate and support each other. The academic atmosphere in the scope of psychological science is known as a situation/psychological climate (psychological climate) that can be created in a group/team to support the performance of groups and larger organizations in a better direction [7].

Supporting facilities that are no less important are supporting facilities and infrastructure including laboratories that can be used by students in supporting student research. Laboratories that have been equipped with existing facilities and infrastructure can be used with the aim of increasing competence and producing graduates who are competent to master science and technology professionally, improve research activities, and disseminate research results that can be poured in the form of scientific papers that can be published in reputable journals both nationally and internationally.

### 2.3 Model of Mentoring and Counseling Through E-Clinic Research

The learning model is as a design that describes the process of detailing and creating environmental situations that allow students to interact so that changes or developments occur in students. A model is a pattern or design that contains steps to be applied so that the achievement of learning activity goals can be effectively and efficiently achieved. The achievement of learning objectives is shown by an increase in competence in applying the design that is compiled.

Increasing student competence in producing scientific papers is carried out through a participatory mentoring model, directed at student participatory interaction so that the need for improvement can be directly observed. The participatory model provides an opportunity for problem-solving methods faced by students in producing scientific papers. Assistance is needed by students in creating good and interesting group discussions and creating polite discussions in the classroom [8].

Mentoring and counseling activities are carried out in 3 stages, including the planning stage, the implementation stage, and the evaluation stage. The planning stage is the initial stage to identify the components of the problem and especially the shortcomings of the existing system. The implementation stage includes the practice of applying the mentoring model by making practical activities to improve the competence of making scientific papers. The evaluation team conducts ability testing by looking at the results of the ability through the thoughts and works produced during the implementation stage. The success of the mentoring model can be shown in several indicators, including: the ability to compile research proposals, methodological ability, and the ability to convey research ideas or ideas in oral form.

## 3 Methodology

Research is based on practical and urgent methods of solving problems. The research topic is oriented towards solving problems in students who have obstacles in completing

the writing of scientific papers. Students have a very large potential to write scientific papers based on fields of work that have been engaged in for a long time. The fundamental problem is that the habit of writing using scientific rules is very weak, so special methods are needed to bridge the potential possessed and the existing obstacles.

### 3.1 Approaches and Types of Research

Research uses a quantitative approach, quantitative methods are research methods based on positivistic (concrete data), research data in the form of numbers that will be measured using statistics as a calculation test tool, related to the problem under study to produce a conclusion. Positivistic philosophy is used in certain populations or samples [9].

Based on the situation of the importance of aligning between existing potentials and constraints, the study was carried out using action research. Classroom Action Research according to [10] is an alternative research application that is easy to do during the teaching and learning process. Action research is aimed at making changes to all participants and changing the situation in which the research is carried out in order to achieve incremental and continuous improvement of practice [11].

### 3.2 Research Subjects

Action research is carried out at the Master of Agribusiness UPN Veteran Yogyakarta with a focus on improving the ability of students to produce reputable scientific works. This action needs to be done to harmonize between the potential that students have as agents of development and the lack of ability to produce scientific work that demands scientific principles.

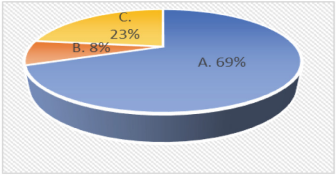
## 4 Results and Discussion

### 4.1 Mentoring Model Design

Institutional research activities designing mentoring models are carried out through several stages of systemized activities, including the study of inputs, processes, outputs. Activities are expected to produce an efficient and effective mentoring model to produce students' ability to write articles that can be published in reputable journals nationally. Technical activities are carried out through several stages, including: 1). Survey of the initial state of the research subject, 2). Workshop on mentoring models, 3). Intensive mentoring, 4). Evaluation of the final results.

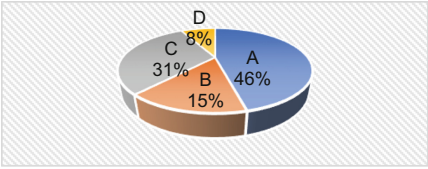
1. Survey of the initial state of the subject of the study

Initial activities are carried out through a survey of understanding in making scientific works in general (for theses and articles of scientific papers). The survey stage is carried out to see the initial condition of the subjects to be mentored. The results of the survey through the questionnaire were distributed to the mentoring participants as follows,




A.. To add insight into science; B. For the conditions of promotion; C. To meet current needs

**Fig. 1.** Reasons for S2 schooling




A.. Haven't written scientifically for a long time; B. Limited abilities; C. Limited time; D. School preparation

**Fig. 2.** The Main Difficulties of Writing Scientific Papers

a. The purpose of the S-2 school and the ability to write scientific papers

Based on a survey with indicators of school goals and writing ability, it was found that students have the goal of increasing knowledge insight by 69% and for rank needs by 23%. Ability indicators show that 46% of students have not written scientifically for a long time. The results can be seen in Fig. 1 and Fig. 2.

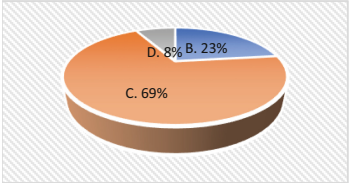
b. Understanding research and strategies in research

Writing scientific papers requires the habit of thinking scientifically with fairly strict provisions. Research requires conditions in terms of systematics, where research requires a systemized thinking pattern in sequence from understanding the problem to analyzing the results. Research requires careful planning, so that there is sustainability from the beginning to the end of the research and research must apply scientific concepts by using theories to solve existing problems. Indicators of understanding research problems and strategies for completing research can be seen in Fig. 3 and Fig. 4.

Based on both indicators, it shows that students already understand the meaning of the problem, so that with this understanding students can define the problem and can then find solutions to overcome problems through research that will be carried out.

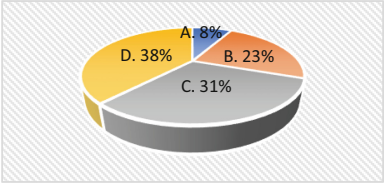
c. Definition of research problems and functions

Students know that study solves problems, fills unmet needs, and reduces gaps. All students understand the problem's origin indicators, so they'll understand the study better.




B. Potential arising from phenomena and interesting to conduct research and their solution; C. Gaps between expectations (das solen) and reality (das sein), between needs and those that are available, between what should be and those that exist.; D. The complexity that occurs in an event that must be resolved.

**Fig. 3.** Definition of problems in research problems




A. Study and work hard as much as you can
B. Receive intensive guidance
C. Give more time to work on the thesis
D. Discussion with friends and lecturers.

**Fig. 4.** Strategies for writing scientific papers thesis Final Project on time

d. Subject matter of thought and explanation of research problems

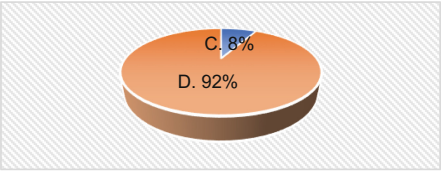
Students comprehend the order of the main thoughts (62%), indicating they understand the research topic selection process. 92% of students grasp how to create a background to make a research topic appealing and worthwhile.

e. Methods of approach in research and differences in principles

84% of students comprehend the two approaches, and 62% understand the differences in their principles (Fig. 5).

f. Expectations in supervisors

Students expect the supervisor to solve school and job issues, according to supervisor indicators (Fig. 6). Supervisors should be more proactive in helping students write scientific papers correctly and on time by adjusting their busy work and tasks (Fig. 7).

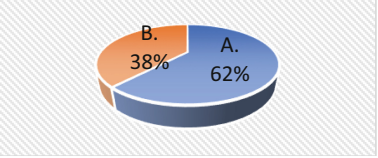



A. seeking an unknown answer; B. meet needs that are not yet available; C. eliminate or narrow the gap between expectations and reality; D. everything is true

**Fig. 5.** Functions of research activities


A. Personal experience, B. deduction and theory, reading books, C. sociopolitical circumstances and practical situations D. Everything is true

**Fig. 6.** Research problems can come from a wide variety




A.. Theme-Topic-Title; B. Topic-Theme-Title; C. Themes-Topic-Titles; D. Topic-Title-Theme

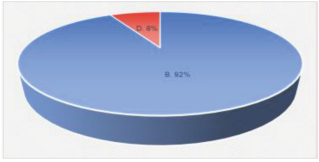
**Fig. 7.** Based on the discussion of the subject matter of the mind from general to special, which one do you think is correct

g. Preparation for Making the Final Project

According to the final project preparation indicators, 92% of students said they needed to act immediately to do tasks with active consultation and frequently to campus to discuss research topics (Fig. 8).

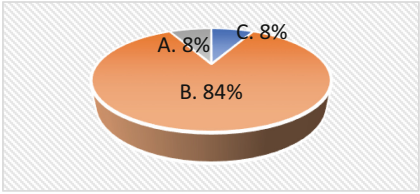
## 4.2 Mentoring Model Workshop

The workshop was held for two days, namely 1–2 July 2022 at the Atrium Premier Jogja Hotel (Fig. 9). Activities include debriefing by providing material on the use of good and correct Indonesian, the use of research methods, and writing scientific papers (Fig. 10).



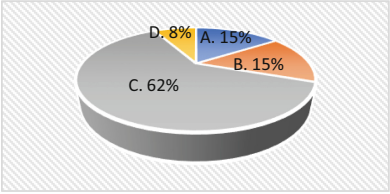
A. Literature Review; B. Background; C. Discussion; D. Formulation and purpose of the problem

**Fig. 8.** Research problems or potential material to be studied require a reason, explanation of the problem and written in the section



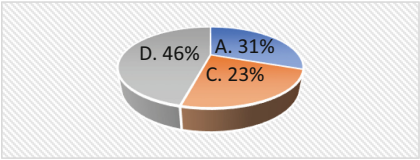

A. Deeply understand, B. Quite understand, C. Lack of understanding D. Totally do not know

**Fig. 9.** In the study known there are 2 kinds of approaches, Do you understand both approaches,



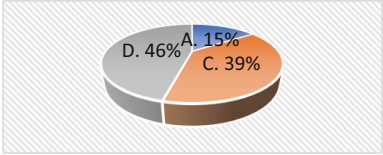

A. The qualitative approach is to test or carry out theoretical and quantitative confirmations of generating theories or propositions of the object under study.
B. The quantitative approach is concerned with numbers and qualitative with regard to sentences.
C. The quantitative approach is to test or confirm the theory and qualitatively produce a theory or proposition of the object under study.
D. The qualitative approach is concerned with numbers and quantitative with regard to sentences.

**Fig. 10.** Difference of principles from quantitative and qualitative approaches




A. Can't divide the mentoring time; B. There is a fear of facing the adviser; C. Unprepared on the material to be consulted; D. A, B, C are correct

**Fig. 11.** Constraints in mentoring,




A.. Supervisors provide scientific information related to the theme / topic chosen by students B. Guidance can be monitored by a good system; C. The supervisor must actively monitor the development of the students who are guided; D. The supervisor provides a special schedule for discussion / guidance

**Fig. 12.** What do you expect from the mentoring model,

The workshop was attended by 14 students who were in the stage of making a final project proposal (thesis), writing a final project (thesis), and writing scientific papers for publication (Fig. 11).

1. Implementation of mentoring workshops

The workshop activity took place very conductively to the existence of a two-way communication system between students and the speaker, so that students could understand the flow of thinking conveyed by the speaker (Fig. 12). The workshop material includes general explanations and dynamics of students in completing their writings, scientific narratives with the correct methodology, quantitative research methods, qualitative research methods.

The material provided includes methods that underlie research activities that begin with the determination of research topics, where research topics must meet: the researcher's ability to reach topic, ease of obtaining data, topic interesting to research, and the usefulness of the topic for science and society.

Participants were given a clear understanding of the limits of qualitative and quantitative research approaches. Qualitative research is more eager to find new theories based on the natural phenomena studied, while quantitative research relies more on testing (confirming) theories on the object under study and produces support for the theory or

rejection of existing theories. Both approaches in research position the theory in different positions, the qualitative approach uses theory as a comparison of the phenomenon under study and the quantitative approach uses theory as the direction of the variable relationship of the object under study.

The workshop material provides participants with the skills to create narratives using the correct methodology by providing an understanding of the purpose, characteristics, and types of narratives; characteristics, types, rules, and elements of scientific work; and step create a scientific narrative. Knowledge of writing narratives gives participants the ability to create narratives logically, scientifically, systematically so that the information or insights conveyed can be informative and easily accepted by readers.

2. Intensive mentoring

Assistance is carried out intensively to create comfortable conditions for students who have limited provisions in writing scientific papers. Mentoring is carried out through very detailed stages according to the order in making scientific papers. In intensive mentoring consists of 14 participants and 5 companions and each participant is given a companion according to the companion's area of expertise and ratio (participant and companion). The series of stages in writing scientific papers using forms and mentoring models are carried out with online and offline systems.

Mentoring activities with intensive consultation are carried out monitoring in three stages of monitoring, namely 1 week after the workshop. The activities carried out by participants are to make or work on each stage of the study of written works, then conduct scheduled consultations with companions. In general, participants do not use the opportunity to consult optimally, this is because participants are faced with the situation of having to divide assignments for lectures and work. The companion must be more active to always remind participants to actively consult.

The task of the companion is to carry out assessments and correction records at each stage of the study, assessment in three categories (good, medium, less) and then return the results of the corrections to the participants (students). The results of the correction from the companion, then corrected the participants according to the notes from the mentor, then at the end of the activity a final assessment of the results of the scientific work was carried out (Table 1).

### 4.3 Evaluation of the Final Result

Mentoring activities to produce the ability to write participants' scientific papers are carried out through three stages, namely 1). Providing awareness, knowledge, and knowledge to increase the capacity of participants in making scientific papers, 2). Intensive assistance to improve abilities, skills, and practice in writing and producing scientific papers, and 3). Evaluation is carried out to provide an assessment in terms of the ability of participants and the mentoring methods that have been implemented.

**Table 1.** Mentoring Monitoring Form

| Student Name: | | NPM: | | | |
|---|---|---|---|---|---|
| Companion: | | | | | |
| Stage/ Date of consultation | | | | | |
| No | Stages of Study | Detail | Information | | |
| | | | Good | Keep | Less |
| 1 | Topic | | | | |
| 2 | Heading | Subject of study | | | |
| | | Object of study | | | |
| 3 | Background | | | | |
| 4 | Problem formulation | | | | |
| 5 | Research objectives | | | | |
| 6 | Theory | Main | | | |
| | | Supporter | | | |
| 7 | Frame of thought or research | | | | |
| 8 | Research methods* | Research approach | | | |
| | | Types of research | | | |
| 9 | Analytical techniques | | | | |
| 10 | Bibliography | Book | | | |
| | | Journal | | | |

Description * for research methods

1. Monitoring Stages Analysis

The success of mentoring can be seen from the results of mentoring, namely the interaction between participants and companions who produce scientific work. The analysis using the monitoring stages can be seen in Table 2**.**

Based on Table 2 it shows that of the 14 participants who took part in the mentoring, not all were able to complete all stages of performance. Participants who have completed all stages of performance which include 10 points of assistance (topic studies, titles, background, problem formulation, research objectives, theories, research frameworks/thoughts, research methods, analytical techniques, and bibliography) were 12 participants, while 2 participants did not complete until the final monitoring deadline.

The results of the mentoring showed that the indicators of the performance stages that became the participants' problems were in the indicators of correct narrating the background of the problem, the use of the main theory used as a research reference, and making a research framework. The three indicators are critical indicators in making scientific work, because in narrating these indicators, a level of analysis is needed and

**Table 2.** Monitoring Stage Results

| No | Performance Stages | Monitoring | | | Information |
|---|---|---|---|---|---|
| | | I | II | III | |
| 1 | Topic | 10 | 14 | 14 | * |
| 2 | Heading | 9 | 14 | 14 | * |
| 3 | Background | 4 | 8 | 12 | ** |
| 4 | Problem formulation | 7 | 12 | 12 | ** |
| 5 | Research objectives | 7 | 12 | 12 | ** |
| 6 | Theory | 4 | 8 | 12 | ** |
| 7 | Frame of mind | 3 | 8 | 12 | ** |
| 8 | Research methods | 6 | 12 | 12 | ** |
| 9 | Analytical techniques | 6 | 12 | 12 | ** |
| 10 | Bibliography | 6 | 12 | 12 | ** |

Information: */ = participants finish following all stages of performance; **/ = participants do not finish following all stages of performance.

relates the phenomenon to the theory needed. In this narrative process, the role of the companion is very large to guide participants to create a narrative, namely:

a. On the background indicators can show or give or argue important reasons the research is interesting to write about,
b. On the indicators of theory can show what the main theory is used as a handle in writing, because many theories exist but it takes a theory that is the parent of all theories.
c. In the indicators of the research / thinking framework, participants need more intensive assistance must narrate the roadmap of their scientific work with the theory used.

2. Mentoring Work

The mentoring program in producing scientific papers which was attended by 14 participants has succeeded in providing participants with the ability to make written works. The success of the program is largely determined by the activeness of the participants and companions,

a. Participants must have the awareness that making written works is mandatory to be able to complete studies by focusing more on making scientific papers. Some participants who are late in working on performance indicators are generally caused by busy work.
b. The companion must be more active in encouraging discussion and allowing more time to discuss with the participants he or she is accompanying.

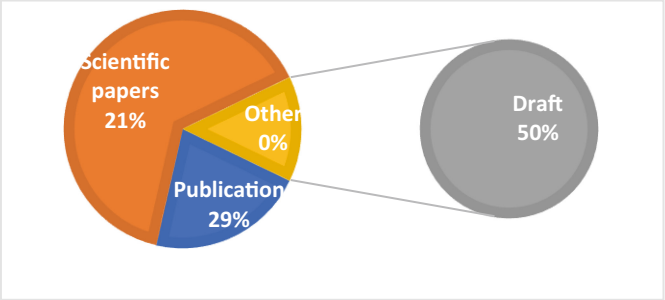



**Fig. 13.** The Success of Making Scientific Papers

The work that can be produced by participants with intensive consultation and mentoring activities by the companion does not all produce the desired work. There are three conditions of work that can be achieved by participants, namely: 1). Publication of scientific papers, 2). Scientific papers, etc. 3). A draft of the scientific paper, in full can be seen in Fig. 13.

The output of 14 participants who took part in the mentoring activity, 4 (29%) participants succeeded in publishing their scientific papers in nationally reputable journals and 3 (21%) participants produced scientific papers that had not been published, and 7 (50%) participants in the result stage in the form of draft scientific papers. The largest percentage, namely 50%, are participants or students who are still in the process of applying for research, so that the work that can be made is not yet at the publication stage.

## 5 Conclusions

Making a mentoring model in the preparation and production of scientific work through several stages, namely: Analyze the condition of the participants, create performance indicators, providing intensive mentoring, monitoring.

The existence of the E-Clinic can be efficiently and effectively by producing participants' scientific papers in the form of publications of 4 participants (29%), 3 participants in the form of scientific papers (21%), and 7 participants in the form of draft scientific papers (50%).

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