# THE EFFECT OF LEARNING MOTIVATION ON LEARNING OUTCOMES OF APPROACH CONTROL PROCEDURE PRACTICES AIR TRAFFIC 3 DIPLOMA STUDY PROGRAM IN SURABAYA FLIGHT POLYTECHNIC

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***Abstract*—IEEE This study aims to determine the effect of learning motivation on learning outcomes of the Approach Control Procedure cadets of the Air Traffic Diploma 3 Study Program at the Aviation Polytechnic of Surabaya. The research method used is a quantitative method. This study involved a population of 43 cadets of the 11 Alpha and Bravo Air Traffic Study Program at the Surabaya Aviation Polytechnic. Data were collected using the method of observation, questionnaire (questionnaire) with reference to the Academic Motivation Scale, interviews, and literature study. The questionnaire data (questionnaire) was analyzed using the Pearson Product Moment Correlation with the Statistical Product and Service Solution (SPSS) Serie 25 program. The results showed that extrinsic motivation (59.57%) was more dominant than intrinsic motivation (40.43%). cadets with extrinsic motivation have an average learning outcome of 66.03; while cadets with intrinsic motivation have an average learning outcome of 62.73. The output of the Pearson Product Moment Correlation obtained a Sig. (1-tailed) value of 0.017 which means the value is <0.05, then according to the basis for decision-making in the Pearson Product Moment Correlation Test, it can be concluded that there is an influence of learning motivation and practical learning outcomes. Approach Control Procedure of cadets of the Diploma 3 Air Traffic Study Program at the Aviation Polytechnic of Surabaya.**

***Keywords— learning motivation, learning outcomes, the approach control procedure***

## I. INTRODUCTION

### *A. Background*

The Air Traffic Study Program is a training program that prepares Human Resources for the Transportation of aviation personnel who are skilled in the field of service and traffic flow guidance in the aviation world. In addition, Air Traffic Study Program cadets are also given lessons in aviation safety, Air Traffic Management, and Aviation English. In learning Air Traffic Management, especially in the Approach Control Procedure course, warning cadets in theory and practice to achieve competency in mastering air traffic guidance in the Procedural Approach Control Unit.

Approach Control Procedure practicum is a simulation material carried out by cadets as a result of learning Approach Control Procedure theory carried out in class as teaching and learning material in class. This Approach Control Procedure practicum is a simulation of a virtual air traffic piloting situation with problems or problems and exercises that have been adapted to the actual conditions at the airport. After doing the Approach Control Procedure practicum, the cadets will get grades or learning outcomes from the Approach Control Procedure practicum.

Learning outcomes from the theory and practicum of the Approach Control Procedure are intended as an assessment that is used as consideration for ATC cadets to continue their education in the next semester or not. There are many problems that the cadets get from the learning outcomes of the ATC cadets in the Approach Control Procedure practicum. Many things are the source of the failure of ATC cadets in carrying out the Approach Control Procedure practicum. One of them is the lack of motivation to learn the cadets.

TABLE I. LIST OF AVERAGE PRACTICUM VALUES FOR APPROACH CONTROL PROCEDURE SUBJECTS UNDER THE MINIMUM COMPLETENESS CRITERIA FOR CADETS DIPLOMA 3 STUDY PROGRAM AIR TRAFFIC 11 ALPHA AND BRAVO

| No | Initial Name | Course | Score | Repair |
|---|---|---|---|---|
| 1 | AA | LLU 11 A | 69,78 | 70* |
| 2 | AS | LLU 11 A | 68,89 | 70* |
| 3 | GD | LLU 11 A | 67 | 70* |
| 4 | RH | LLU 11 A | 68,78 | 70* |
| 5 | SA | LLU 11 A | 69,33 | 70* |
| 6 | SN | LLU 11 A | 69,33 | 70* |
| 7 | RU | LLU 11 B | 69.56 | 70* |
| 8 | AL | LLU 11 B | 69,11 | 70** |
| 9 | IN | LLU 11 B | 69,78 | 70* |
| 10 | MI | LLU 11 B | 68,67 | 70* |

Note: * = 1 x repair;
** = 2 x repairs
Source: Air Traffic Study Program

TABLE II. LIST OF PRACTICUM EXAMINATION SCORES FOR APPROACH CONTROL PROCEDURE SUBJECT UNDER MINIMUM COMPLETENESS CRITERIA FOR GRADUATES DIPLOMA 3 AIR TRAFFIC STUDY PROGRAM 11 ALPHA AND BRAVO

| No | Initial Name | Course | Score | Repair |
|---|---|---|---|---|
| 1 | AA | LLU 11 A | 65 | 70** |
| 2 | AS | LLU 11 A | 67 | 70* |
| 3 | GD | LLU 11 A | 67 | 70** |
| 4 | MD | LLU 11 A | 64,5 | 70* |
| 5 | SA | LLU 11 A | 67,25 | 70** |
| 6 | SH | LLU 11 A | 67,25 | 70* |
| 7 | YQ | LLU 11 A | 62,5 | 70* |
| 8 | AB | LLU 11 B | 65 | 70** |
| 9 | NE | LLU 11 B | 65 | 70* |
| 10 | RU | LLU 11 B | 67,5 | 70* |
| 11 | WE | LLU 11 B | 68 | 70* |
| 12 | AL | LLU 11 B | 60 | 70** |

| | | | | |
|---|---|---|---|---|
| 13 | FR | LLU 11 B | 57,5 | 70* |
| 14 | JA | LLU 11 B | 66,5 | 70* |
| 15 | JU | LLU 11 B | 63,5 | 70* |
| 16 | RE | LLU 11 B | 66 | 70* |
| 17 | MI | LLU 11 B | 65 | 70* |
| 18 | NI | LLU 11 B | 65 | 70* |
| 19 | BE | LLU 11 B | 62,5 | 70** |
| 20 | PE | LLU 11 B | 63 | 70* |
| 21 | SE | LLU 11 B | 65,5 | 70* |

Note : * = 1 x repairs;
** = 2 x repairs
Source: Air Traffic Study Program

It can be seen that there are still cadets who have the Approach Control Procedure course grades below the Minimum completeness criteria (KKM). This is of course caused by a factor. This condition attracted the author's interest to conduct a study related to the effect of learning motivation on learning outcomes.

Based on the above background, the authors conducted a search entitled, "The Influence of Learning Motivation on Learning Outcomes of Approach Control Procedure cadets in the Diploma 3 Air Traffic Study Program at the Aviation Polytechnic of Surabaya."

### *B. Problem Identification*

*1)* There are still cadets with Approach Control Procedure course grades below the Minimum Completeness Criteria.

*2)* The cadets do not fully understand the factors that can influence the approach control procedure learning.

*3)* The cadets do not understand how important the Approach Control Procedure is as an introductory course on the second On the Job Training (OJT) at the Approach Control Procedural Unit at airports spread throughout Indonesia in the following semester.

### *C. Scope of The Problem*

From the identification of the problems that have been raised, the authors limit this writing to the scope of the influence of cadets' learning motivation on the results of the Approach Control Procedure practicum learning with a weight of 3 credits for the Diploma 3 Air Traffic Study Program at the Surabaya Aviation Polytechnic.

### *D. Problem Formulation*

Based on the background described, the authors formulate the problem, as for what the author can raise in the formulation of the problem, namely whether the cadets' learning motivation affects the learning outcomes of the Approach Control Procedure Practicum of the Diploma 3 Air Traffic Study Program at the Aviation Polytechnic of Surabaya.

## II. LITERATURE REVIEW

### *A. Motivation*

Motivation comes from the word "motive" which means "the driving force that has become active" (Sardiman, 2001). Supriyanto (2018) says that motivation comes from the word "move" which means encouragement or moving. Another opinion also says that motivation is the driving force or impetus to do a job, which can come from within and also from outside (Dalyono, 2005).

### *B. Types of Motivation*

Deci and Ryan (in Vallerand et al, 1992) suggest that motivation is divided into 3 (three) types, namely motivation, extrinsic motivation, and intrinsic motivation. The explanations for the three motivations are as follows:

*1) Amotivation*

Individuals with this type of motivation are not motivated either intrinsically or extrinsically. Individuals will feel unable and uncontrolled in carrying out activities. For example, a student does not know why he is studying at school, so he feels reluctant to learn.

*2) Extrinsic Motivation*

According to Deci (1975), "extrinsic motivation pertains to a wide variety of behaviors which are engaged in as a means to an end and not for their own sake". So, extrinsic motivation is related to the behavior of the individual. Deci and Ryan (1975) divide motivation into 3 (three) types, namely: *External Regulation*

This type illustrates that individuals are motivated to carry out activities because of a necessity. For example, a student studied before an exam because his parents forced him to. *Introjected Regulation*

The definition of introjection according to the Oxford dictionary (1989) is "the unconscious adoption of the ideas or attitudes othof ers". So projected regulation can be interpreted as an action taken, which is indirectly the action is also carried out by other people. Individuals with this type of extrinsic motivation perform activities because other people generally do them. For example, a student will study before a test because it is done by a good student.

*a) Identified Regulation*

This type of identification occurs when individuals perceive introjected regulation as an important and much-needed factor. For example, a student will study before an exam because he thinks it is important to him.

*b)* Intrinsic Motivation

Intrinsic motivation refers to the fact that individuals perform an activity because of the pleasure and satisfaction obtained when doing the activity (Deci and Ryan, 2000). For example, a student takes a language class because he likes language lessons. Vallerand et al (1992) postulated three types of intrinsic motivation, namely:

- Intrinsic Motivation-Stimulation (IM-Stimulation)

IM stimulation occurs when individuals perform activities to feel the stimulation, for exa,mple a sense of pleasure or enthusiasm.

- Intrinsic Motivation-Accomplish-ment (IM Accomplishment)

Individuals with this type of intrinsic motivation are more focused on the achievement they get. For example, a student is motivated to study in order to rank first in his class.

- Intrinsic Motivation-Knowledge (IM-knowledge)

This type of intrinsic motivation refers more to curiosity, curiosity, learning goals, and motivation to learn. Individuals with this type of motivation perform an activity to satisfy curiosity and learn something new.

### C. *Learn Motivation*

Motivation and learning are two things that influence each other. Students will study hard if they have the motivation to learn. Motivation is needed so that individuals can achieve a goal in learning. Good and Brophy (in Uno, 2011) state that learning is a process or interaction that a person does in obtaining something new in the form of behavior change as a result of the learning experience. Changes in behavior can be seen in students' mastery of new patterns of responses to their environment in the form of skills, knowledge, attitudes, abilities, understanding, and otoptions emotion), appreciation, physical, character, and social relations.

### D. *Learning Outcomes of Approach Control Procedure Practicum*

According to Nawawi (in Susanto, 2013), learning outcomes can be interpreted as the level of student success in studying subject matter at school which is expressed in scores obtained from test results regarding a number of certain subject matters. Hamalik (2004) defines learning outcomes as the level of mastery achieved by students in following the teaching and learning process in accordance with the educational objectives that are applied.

From some understanding of learning outcomes above, it can be concluded that learning outcomes are the results of efforts obtained by someone in the process of interacting with their environment to acquire knowledge and skills.

Approach Control Procedure is a Diploma 3 Air Traffic course in semester 4 with a weight of 1 theoretical credit and 3 practical credits. Based on the Curriculum and Syllabus of the 2019 Air Traffic Diploma 3 Study Program, the competency standard for the Approach Control Procedure course is that the cadets are able to explain the procedures for guiding flight traffic in the Approach Control unit and can be applied in the world of work in providing Approach Control Services.

TABLE III. EDUCATION AND TRAINING CURRICULUM FOR DIPLOMA 3 AIR TRAFFIC XI ALPHA AND BRAVO SEMESTER 4

| NO | SUBJECT | SKS | | |
|---|---|---|---|---|
| | | T | P | JML |
| 1 | Bahasa Indonesia | 1 | 1 | 2 |
| 2 | Intermediate English | 1 | 1 | 2 |
| 3 | Airport Operation | 1 | 1 | 2 |
| 4 | Approach control Procedure | 1 | 3 | 4 |
| 5 | Area control Procedure | 1 | 3 | 4 |
| 6 | Flight Plan | 1 | 1 | 2 |
| 7 | Human Factor for ATC | 2 | - | 2 |
| Jumlah Semester 4 | | 8 | 10 | 18 |

Based on the Surabaya Aviation Polytechnic Manual Chapter 3, there are rules in determining the assessment system and weight. The assessment system for practicum academic processes, quizzes, midterm exams, and final semester exams is given in the form of numerical values on a scale of 0 to 100 with two decimal places behind a comma. The weighting of the final grade is determined by the lecturer in charge of the course, depending on the distribution of the load/material given. Minimum attendance percentage. 80% (4 times face to face) with reasons of either illness or regimental activities. The passing grade for each course is 70 (seventy) in category B. In general, the distribution can be explained in Figure 2.1, as follows:

$$\Sigma NT = 20\%NUH + 30\%UTS + 50\%UAS$$

$$\Sigma NP = 20\%LAP + 80\%NUP$$

$$NTP = \frac{((\Sigma NT * SKS\ Teori) + (\Sigma NP * SKS\ Praktek))}{(SKS\ Teori + SKS\ Praktek)}$$

$$\Sigma NAK = 90\%\ NTP + 10\%\ Absensi$$

Keterangan :

| | |
|---|---|
| NUH | : Nilai ulangan harian |
| UTS | : Ujian tengah semester |
| UAS | : Ujian akhir semester |
| LAP | : Laporan tugas akhir |
| NUP | : Nilai ujian praktek |
| ΣNT | : Jumlah nilai teori |
| ΣNP | : Jumlah nilai praktek |
| NTP | : Nilai teori praktek |
| ΣNAK | : Nilai akhir mata kuliah |

Fig. 1. Distribution of ratings

TABLE IV. BENCHMARKS AND RATING WEIGHTS

| Nilai Angka | Nilai Huruf | Nilai Bobot | Keterangan |
|---|---|---|---|
| 85 – 100 | A | 4 | Memuaskan |
| 80 – 84,99 | AB | 3,5 | Sangat Baik |
| 70 – 79,99 | B | 3 | Baik |
| 65 – 69,99 | BC | 2,5 | Cukup Baik |
| 60 – 64,99 | C | 2 | Cukup |
| 50 – 59,99 | D | 1 | Kurang |
| <50 | E | 0 | Gagal |

Values that are included above the Minimum Completeness Criteria are with a minimum score of 70-79.99 (categories of letters A to B), while the values below the Minimum Completeness Criteria are with a value of numbers below 70-79.99 (categories of letters C to E).

The learning outcomes in this study are the value of the Approach Control procedure practicum course with a weight of 3 credits for Taruna D 3 LLU Class XI Alpha and Bravo Aviation Polytechnic Surabaya. The results of the Approach Control Procedure practicum are taken from 80% of the Practical Exam Score (Examination) plus 20% of the Practical Practice Average (Exercise).

## III. METHOD

### A. *Data Collective Method*

The type of method used by the author to facilitate data collection in research on the effect of learning motivation of cadets in the air traffic study program on the results of the Approach Control Procedure practicum at the Surabaya Aviation Polytechnic are:

*1) Observation*

From this study, the authors made direct observations of the D3 Air Traffic cadets of the XI Alpha and Bravo Study Programs. Participatory observation techniques are researchers involved with the daily activities of the object

being observed, participating in doing what the data source does.

*2) Koesioner*

In this study, the authors used an Academic Motivation Scale (AMS) questionnaire (Vallerand et al, 1992) in the form of a Likert scale with an answer sheet provided so that respondents could choose answers and explanations.

*3) Survey*

Surveys are the main way to collect primary data when secondary data is considered incomplete enough to answer a question (Mubyanto and Suratno: 1981).

### *B. Research Object*

In this study, the author uses 43 populations who are cadets of the Air Traffic Diploma 3 Study Program Alpha and Bravo Forces.

### *C. Location and Time of Research*

In preparation for the tutors, the authors conducted research at the Aviation Polytechnic of Surabaya, which is located on Jl. Jemur Andayani 1/73 Tel. (031) 8410871, Fax. 8490005 Surabaya 60236.

The time of compiling this research starts from October to December 2021.

### *D. Variabel Reaserch*

The author in this case uses the independent variable (variable X) and the dependent variable (variable Y) which are not expressed in the form of numbers. An independent variable is a type of variable that explains or affects other variables. The dependent variable is the type of variable that is explained or influenced by the independent variable. The variables that the authors take from this research are:

*1)* The independent variable (X) is the influence of learning motivation.
*2)* The Bound Variable (Y) is the Approach Control Procedure Practicum Learning Outcomes of the Cadets of the Diploma 3 Air Traffic Study Program at the Aviation Polytechnic of Surabaya.

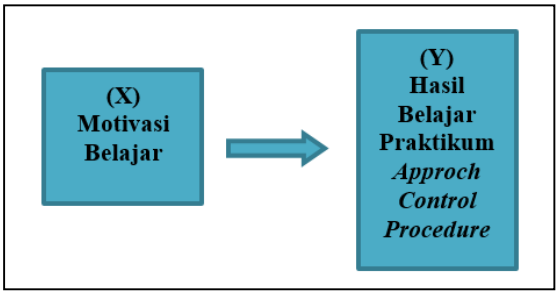


Chart 1 Research variables Source: The author's work 2021

Explanation:

*1)* Variable X explains the influence of cadets' learning motivation which will be used as a benchmark for measuring cadets' learning outcomes.

*2)* Variable Y explains the learning outcomes of Approach Control Procedure cadets of the Diploma 3 Air Traffic Study Program XI Alpha and Bravo at the Aviation Polytechnic of Surabaya.

### *E. Research Indicators*

TABLE V. REASERCH INDICATORS

| No | Variabel | Indikator |
|---|---|---|
| 1 | Motivasi (Variabel X) | 1.1 Amotivasi<br>1.2 External Regulation<br>1.3 Introjected Regulation<br>1.4 Identified Regulation<br>1.5 Intrinsic Motivation-Stimulation<br>1.6 Intrinsic Motivation-Accomplishment<br>1.7 Intrinsic Motivation-Knowledge |
| 2 | Hasil belajar (Variabel Y) | 1.1 Nilai mata kuliah praktikum *Approach Control Procedure* diatas Kriteria Ketuntasan Minimal<br>1.2 Nilai mata kuliah praktikum *Approach Control Procedure* dibawah Kriteria Ketuntasan Minimal |

### *F. Analysis Method*

This study used the Academic Motivational Scale (AMS) (Vallerand et al, 1992). AMS is the English version of Echelle de Motivation en Education (EME). EME is based on self-determination theory, which contains 28 items and is divided into 7 categories, namely: Intrinsic motivation (intrinsic motivation to know, to accomplish things, and to experience stimulation, three types of extrinsic motivation (external, introjected, and identified regulation) , and the last is a motivation. EME is translated into English through methodological procedures. AMS is used to assess the type and how much motivation to learn affects individuals.

## IV.RESULTS AND DISCUSSION

### *A. Research Results*

The research conducted by the author is through direct field observations and the distribution of questionnaires (questionnaires) with 43 respondents from the Air Traffic Diploma 3 Study Program cadets Alpha and Bravo.

### *B. Observational Research Result Data*

The author collects data by observation by making direct observations of the learning process of the cadets of the Air Traffic Study Program at the Surabaya Aviation Polytechnic either in the dormitory or in the classroom regarding the influence of learning motivation on the results of the Approach Control Procedure practicum at the Surabaya Aviation Polytechnic.

The author knows that in the Approach Control Procedure course, cadets still encounter some difficulties, especially in the Approach Control Procedure practicum. Among them do not fully understand the material being taught, lack confidence when doing Approach Control Procedure practicum, and there a low desire to catch up on delays in Approach Control Procedure practicum courses.

As a result, the learning outcomes they get in the Approach Control Procedure practicum are not satisfactory.

The author also collects data through a questionnaire (questionnaire). Data processing of the results of the questionnaire research was carried out to find answers to the problem formulations that had been previously proposed. In this study, the authors used the Academic Motivation Scale questionnaire (Vallerand et al, 1992) in the form of a Likert scale with an answer sheet provided so that respondents could choose answers and explanations.

The author distributed questionnaires to the respondents, namely 43 cadets of the Diploma 3 Air Traffic Alpha and Bravo study program to obtain data on the motivation to learn in the Approach Control Procedure practicum course. The statements submitted amounted to 21 statements, which were divided into 3 (three) indicators, namely:

Motivation (Variable X1) which contains 3 statements

*1)* Extrinsic Motivation (Variable X2) which contains 9 statements

*2)* Intrinsic Motivation (Variable X3) which contains 9 statements

The data obtained is the data of the independent variable (variable X). The questionnaire uses a Likert scale with five alternative answers. Guidelines for scoring on the Likert scale can be seen in the following table.

TABLE VI. REASERCH GIVING GUIDELINES

| Alternative Answers | Score Each Answer |
|---|---|
| Strongly Disagree | 1 |
| Disagree | 2 |
| Neutral | 3 |
| Agree | 4 |
| Strongly Agree | 5 |

From the table above, it is known that there are 5 (five) alternative answers used in filling out the learning motivation questionnaire, namely strongly disagree with point 1, disagree with point 2, neutral with point 3, agree with point 4, and strongly agree with point 5.

Furthermore, the authors analyzed the data from the questionnaire research using a computer method, namely with software from the type of statistical data processing, namely Statistical Product and Service Solution (SPSS) series 25.

The analysis used in this study is bivariate analysis. Bivariate analysis was carried out on two variables that were

thought to be related or correlated. In this study, the relationship between learning motivation variables and learning outcomes is seen through practicum scores taken from 20% of the average value of the exercise and 80% of the practical test scores (Examination) for the Approach Control Procedure course in semester 4. The statistical analysis used is the Pearson Product Moment test using a computer.

The first step is to calculate the frequency distribution of the questionnaire by using the frequencies contained in the descriptive statistics in analyzing the data on the SPSS Serie 25 menu. The following is the distribution of the questionnaire with the respondents of the Air Traffic Diploma 3 Diploma Study Program Class XI Alpha and Bravo Aviation Polytechnic Surabaya.

TABLE VII. SEX FREQUENCY OF CADETS OF DIPLOMA 3 AIR TRAFFIC STUDY PROGRAM XI ALPHA AND BRAVO

Gender

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Laki-Laki | 29 | 67.4 | 67.4 | 67.4 |
| | Perempuan | 14 | 32.6 | 32.6 | 100.0 |
| | Total | 43 | 100.0 | 100.0 | |

From the table above, it is known that there are 31 male respondents (67.4%) and 16 female respondents (32.6%) in the Air Traffic Diploma 3 Study Program cadets Alpha and Bravo.

TABLE VIII. AGE FREQUENCY OF CADETS OF DIPLOMA 3 AIR TRAFFIC STUDY PROGRAM XI ALPHA AND BRAVO

Age

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 20 th | 1 | 2.3 | 2.3 | 2.3 |
| | 21 th | 19 | 44.2 | 44.2 | 46.5 |
| | 22 th | 13 | 30.2 | 30.2 | 76.7 |
| | 23 th | 1 | 2.3 | 2.3 | 79.1 |
| | 24 th | 2 | 4.7 | 4.7 | 83.7 |
| | 25 th | 1 | 2.3 | 2.3 | 86.0 |
| | 26 th | 2 | 4.7 | 4.7 | 90.7 |
| | 27 th | 2 | 4.7 | 4.7 | 95.3 |
| | 28 th | 1 | 2.3 | 2.3 | 97.7 |
| | 32 th | 1 | 2.3 | 2.3 | 100.0 |
| | Total | 47 | 100.0 | 100.0 | |

From the table above, it is known that out of 43 respondents, the highest number is respondents aged 21 years (44.2%), while respondents aged 20 years, 23 years, 25 years, 28 years, and 32 years each only amount to 1 (2.3%).

The following are the results of the Approach Control Procedure practicum study with an explanation of the average exercise scores and examination scores of Diploma 3 Air Traffic cadets of Class 11 Alpha and Bravo.

TABLE IX. ELABORATION OF PRACTICUM VALUES AS LEARNING OUTCOMES OF APPROACH CONTROL PROCEDURE CADETS OF DIPLOMA 3 AIR TRAFFIC STUDY PROGRAM XI ALPHA

| No. | Nama Inisial | Rata-rata Nilai *Exercise* | Nilai *Examination* | Nilai Praktikum |
|---|---|---|---|---|
| 1 | AN | 74.44 | 76.5 | 76.09 |
| 2 | AA | 70* | 70** | 70 |
| 3 | AS | 70* | 70* | 70 |
| 4 | CR | 72.44 | 75 | 74.49 |
| 5 | DF | 78.44 | 79 | 78.89 |
| 6 | DS | 77.33 | 71 | 72.27 |
| 7 | FY | 73.67 | 81.5 | 79.93 |
| 8 | FA | 74 | 70 | 70.8 |
| 9 | GD | 70* | 70** | 70 |
| 10 | HA | 72.44 | 72 | 72.09 |
| 11 | KD | 72 | 81.5 | 79.6 |
| 12 | LH | 75.33 | 75.5 | 75.47 |
| 13 | MD | 72.44 | 70* | 70.49 |
| 14 | MA | 76.56 | 80 | 79.31 |
| 15 | MR | 74.33 | 76.5 | 76.07 |
| 16 | NM | 76.22 | 80 | 79.24 |
| 17 | RH | 70* | 74.5 | 73.6 |

| | | | | |
|---|---|---|---|---|
| 18 | SA | 70* | 70** | 70 |
| 19 | SN | 70* | 74 | 73.2 |
| 20 | HR | 79.33 | 71.5 | 73.07 |
| 21 | SH | 74.67 | 70* | 70.93 |
| 22 | VA | 79.78 | 79 | 79.16 |
| 23 | YQ | 74.78 | 70* | 70.96 |

Description : * = 1 x repair;
** = 2 x repair
Source : Data Program Studi Lalu Lintas Udara

From the table above, it is known that 6 cadets made improvements as much as 1 time on the average value of the exercise. Meanwhile, in examination scores, 7 cadets made improvements, 4 of them made repairs 1 time, and 3 cadets made 2 repairs.

TABLE X. ELABORATION OF PRACTICUM VALUES AS LEARNING OUTCOMES OF APPROACH CONTROL PROCEDURE CADETS OF DIPLOMA 3 AIR TRAFFIC STUDY PROGRAM XI BRAVO

| No. | Nama Inisial | Rata-rata Nilai Exercise | Nilai Examination | Nilai Praktikum |
|---|---|---|---|---|
| 1 | AB | 71.79 | 70** | 70.36 |
| 2 | AD | 71 | 70 | 70.2 |
| 3 | NE | 73.84 | 70* | 70.77 |
| 4 | AF | 71.79 | 75 | 74.36 |
| 5 | RU | 70* | 70* | 70 |
| 6 | WE | 73.9 | 70* | 70.78 |
| 7 | AL | 70** | 70** | 70 |
| 8 | DE | 77.01 | 76 | 76.2 |
| 9 | FR | 72.1 | 70* | 70.42 |
| 10 | IN | 70* | 72 | 71.6 |
| 11 | JA | 72.07 | 70* | 70.41 |
| 12 | JU | 72.38 | 70* | 70.48 |
| 13 | RE | 72.19 | 70* | 70.44 |
| 14 | UL | 75 | 72 | 72.6 |
| 15 | MI | 70* | 70* | 70 |
| 16 | NI | 71.73 | 70* | 70.35 |
| 17 | BE | 70.65 | 70** | 70.13 |
| 18 | RX | 71.99 | 75 | 74.4 |
| 19 | PE | 71.88 | 70* | 70.38 |
| 20 | SE | 72.23 | 70* | 70.45 |

Description : * = 1 x repair;
** = 2 x repair

From the table above, it is known that 3 cadets made improvements 1 time and 1 cadet made improvements 2 times on the average value of the exercise. Meanwhile, in examination scores, 14 cadets made improvements, 11 of them made repairs 1 time, and 3 cadets made 2 repairs.

The following is a combination of the results of the calculation of the Academic Motivation Scale questionnaire (Vallerand et al, 1992) with the results of the Approach Control Procedure cadets of the XI Alpha Air Traffic Diploma 3 Study Program:

TABLE XI. TYPES OF MOTIVATION AND LEARNING OUTCOMES OF STUDY PROGRAMCADETSDIPLOMA 3 AIR TRAFFIC XI ALPHA

| No | Nama Inisial | Nilai Akhir | Kategori | Skor Jenis Motivasi | | | Jenis Motivasi Tertinggi |
|---|---|---|---|---|---|---|---|
| | | | | X1 | X2 | X3 | |
| 1 | AN | 76.09 | B | 3 | 36 | 39 | X3 |
| 2 | AA | 70 | B | 4 | 42 | 40 | X2 |
| 3 | AS | 70 | B | 5 | 35 | 39 | X3 |
| 4 | CR | 74.49 | B | 6 | 36 | 36 | X2 |
| 5 | DF | 78.89 | B | 4 | 37 | 44 | X3 |
| 6 | DS | 72.27 | B | 6 | 42 | 44 | X3 |
| 7 | FY | 79.93 | B | 3 | 35 | 35 | X2 |
| 8 | FA | 70.8 | B | 3 | 35 | 35 | X2 |
| 9 | GD | 70 | B | 6 | 33 | 31 | X2 |
| 10 | HA | 72.09 | B | 3 | 45 | 45 | X2 |
| 11 | KD | 79.6 | B | 5 | 42 | 45 | X3 |
| 12 | LH | 75.47 | B | 6 | 33 | 31 | X2 |
| 13 | MD | 70.49 | B | 4 | 44 | 43 | X2 |
| 14 | MA | 79.31 | B | 3 | 45 | 42 | X2 |
| 15 | MR | 76.07 | B | 3 | 45 | 45 | X2 |
| 16 | NM | 79.24 | B | 3 | 38 | 38 | X2 |
| 17 | RH | 73.6 | B | 6 | 43 | 45 | X3 |
| 18 | SA | 70 | B | 6 | 35 | 36 | X3 |
| 19 | SN | 73.2 | B | 4 | 39 | 37 | X2 |
| 20 | HR | 73.07 | B | 6 | 33 | 34 | X3 |
| 21 | SH | 70.93 | B | 4 | 45 | 41 | X2 |
| 22 | VA | 79.16 | B | 4 | 38 | 40 | X3 |
| 23 | YQ | 70.96 | B | 4 | 37 | 33 | X2 |

Keterangan : X1 = Amotivasi
X2 = Motivasi Ekstrinsik
X3 = Motivasi Intrinsik

The table above shows that there are 14 cadets with extrinsic motivation, and 9 cadets with intrinsic motivation. The cadets who finished with the right score on the KKM stated that the cadet had made improvements to the average exercise score and examination score was 4 people.

The following is a combination of the results of the calculation of the Academic Motivation Scale questionnaire (Vallerand et al, 1992) with the results of the Approach Control Procedure cadets of the Air Traffic Diploma 3 Study Program Bravo:

TABLE XII. TYPES OF MOTIVATION AND LEARNING OUTCOMES OF STUDY PROGRAMCADETSDIPLOMA 3 AIR TRAFFIC XI BRAVO

| No | Nama Inisial | Nilai Akhir | Kategori | Jenis Motivasi | | | |
|---|---|---|---|---|---|---|---|
| | | | | X1 | X2 | X3 | Jenis Motivasi Tertinggi |
| 1 | AB | 70.36 | B | 3 | 37 | 37 | X2 |
| 2 | AD | 70.2 | B | 7 | 37 | 35 | X2 |
| 3 | NE | 70.77 | B | 7 | 34 | 30 | X2 |
| 4 | AF | 74.36 | B | 4 | 34 | 38 | X3 |
| 5 | RU | 70 | B | 8 | 31 | 27 | X2 |
| 6 | WE | 70.78 | B | 7 | 30 | 34 | X3 |
| 7 | AL | 70 | B | 11 | 33 | 36 | X3 |
| 8 | DE | 76.2 | B | 6 | 35 | 32 | X2 |
| 9 | FR | 70.42 | B | 6 | 32 | 34 | X3 |
| 10 | IN | 71.6 | B | 8 | 38 | 33 | X2 |
| 11 | JA | 70.41 | B | 7 | 32 | 32 | X2 |
| 12 | JU | 70.48 | B | 3 | 28 | 32 | X3 |
| 13 | RE | 70.44 | B | 4 | 42 | 45 | X3 |
| 14 | UL | 72.6 | B | 7 | 32 | 32 | X2 |
| 15 | MI | 70 | B | 7 | 31 | 34 | X3 |
| 16 | NI | 70.35 | B | 8 | 31 | 30 | X2 |
| 17 | BE | 70.13 | B | 6 | 37 | 39 | X3 |
| 18 | RX | 74.4 | B | 7 | 34 | 31 | X2 |
| 19 | PE | 70.38 | B | 7 | 35 | 38 | X3 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 20 | SE | 70.45 | B | 9 | 30 | 29 | X2 |

Keterangan : X1 = Amotivasi
X2 = Motivasi Ekstrinsik
X3 = Motivasi Intrinsik

The table above shows that there are 11 cadets with extrinsic motivation, and 9 cadets with intrinsic motivation. The cadets who finished with the right score on the KKM which stated that the cadet had made improvements to the average exercise score and examination score were 3 people.

TABLE XIII. DOMINANT MOTIVATION AND AVERAGE PRACTICUM VALUE OF APPROACH CONTROL PROCEDURE CADETS DIPLOMA 3 AIR TRAFFIC STUDY PROGRAM XI ALPHA AND BRAVO

Hasil Belajar

| Motivasi | Mean | N | Std. Deviation |
|---|---|---|---|
| Motivasi Ekstrinsik | 72.8128 | 25 | 3.19791 |
| Motivasi Intrinsik | 72.7594 | 18 | 3.45596 |
| Total | 72.7905 | 43 | 3.26785 |

The table above shows that the cadets of the XI Alpha and Bravo Air Traffic Diploma 3 Study Program have more extrinsic motivation in studying Approach Control Procedure practicum. The number 25 cadets is more dominant in extrinsic motivation, while 18 cadets are more dominant in intrinsic motivation. cadets with extrinsic motivation have an average learning outcome of 72.8128 which is higher than cadets with intrinsic motivation with an average learning outcome of 72.7594.

The next step taken by the author in finding a correlation between learning motivation and learning outcomes for the Approach Control Procedure practicum course is by testing the Product Moment Correlation or Pearson Product Moment. The Pearson Product Moment Correlation Coefficient is used to measure the strength of the linear relationship between data that has an interval/ratio measurement level with a symmetrical relationship direction. The resulting coefficient is between -1 to +1 which indicates whether the linear relationship is positive or negative (Priyono, 2008). The criteria for testing the correlation number are if P-Value> 0.05 then there is no relationship between variable X and variable Y, if P-Value <0.05 then there is a relationship between variable X and variable Y. Interpretation of correlation figures according to Sugiyono (2009),

TABLE XIV. GUIDELINES FOR INTERPRETING CORRELATION COEFFICIENTS

| Interval Koefisien | Tingkat Hubungan |
|---|---|
| 0,00 – 0,199 | Sangat rendah |
| 0,20 – 0,399 | Rendah |
| 0,40 – 0,599 | Sedang |
| 0,60 – 0,799 | Kuat |
| 0,80 – 1,000 | Sangat kuat |

The results of the Product Moment Correlation test can be seen through the analyzed bivariate menu in the Statistical Product and Service Solution (SPSS) Serie 25 application.
The following is a correlation test from the data of each study that has been obtained on each sub-variable and variable X (learning motivation).

TABLE XV. CORRELATION OF MOTIVATION WITH LEARNING OUTCOMES OF APPROACH CONTROL PROCEDURE CADETS OF DIPLOMA 3 AIR TRAFFIC STUDY PROGRAM XI ALPHA AND BRAVO

| | | Amotivasi | Hasil Belajar |
|---|---|---|---|
| Amotivasi | Pearson Correlation | 1 | -.431** |
| | Sig. (1-tailed) | | .002 |
| | N | 43 | 43 |
| Hasil Belajar | Pearson Correlation | -.431** | 1 |
| | Sig. (1-tailed) | .004 | |
| | N | 43 | 43 |

**. Correlation is significant at the 0.01 level (1-tailed).

From the output results above, it is known that the magnitude of the correlation between amotivation and learning outcomes is obtained by the value of Sig. (1-tailed) of 0.002 < 0.05, then according to the basis of decision-making in the Pearson correlation test, that there is a relationship between amotivation and learning outcomes.

TABLE XVI. CORRELATION OF EXTRINSIC MOTIVATION WITH RESULTS OF PRACTICUM APPROACH CONTROL PROCEDURE CADETS STUDY PROGRAM DIPLOMA 3 AIR TRAFFIC XI ALPHA AND BRAVO

**Correlations**

| | | Motivasi Ekstrinsik | Hasil Belajar |
|---|---|---|---|
| Motivasi Ekstrinsik | Pearson Correlation | 1 | .297* |
| | Sig. (1-tailed) | | .027 |
| | N | 43 | 43 |
| Hasil Belajar | Pearson Correlation | .297** | 1 |
| | Sig. (1-tailed) | .027 | |
| | N | 43 | 43 |

*. Correlation is significant at the 0.05 level (1-tailed).

From the output above, it is known that the magnitude of the correlation between extrinsic motivation and learning outcomes is obtained by the value of Sig. (1-tailed) of 0.027 < 0.05, then in accordance with the basis of decision-making in the Pearson correlation test, there is a relationship between extrinsic motivation and learning outcomes.

TABLE XVII. CORRELATION OF INTRINSIC MOTIVATION WITH RESULTS OF PRACTICUM APPROACH CONTROL PROCEDURE CADETS STUDY PROGRAM DIPLOMA 3 AIR TRAFFIC XI ALPHA AND BRAVO

**Correlations**

| | | Motivasi Intrinsik | Hasil Belajar |
|---|---|---|---|
| Motivasi Intrinsik | Pearson Correlation | 1 | .335* |
| | Sig. (1-tailed) | | .014 |
| | N | 43 | 43 |
| Hasil Belajar | Pearson Correlation | .335* | 1 |
| | Sig. (1-tailed) | .014 | |
| | N | 43 | 43 |

*. Correlation is significant at the 0.05 level (1-tailed).

From the output above, it is known that the magnitude of the correlation between intrinsic motivation and learning outcomes is obtained by the value of Sig. (1-tailed) of 0.014 < 0.05, then in accordance with the basis of decision-making

in the Pearson correlation test, there is a relationship between intrinsic motivation and learning outcomes.

TABLE XVIII. CORRELATION OF LEARNING MOTIVATION WITH LEARNING OUTCOMES APPROACH CONTROL PROCEDURE CADETS DIPLOMA 3 AIR TRAFFIC STUDY PROGRAM XI ALPHA AND BRAVO

**Correlations**

| | | Motivasi | Hasil Belajar |
|---|---|---|---|
| Motivasi | Pearson Correlation | 1 | .266* |
| | Sig. (1-tailed) | | .042 |
| | N | 43 | 43 |
| Hasil Belajar | Pearson Correlation | .266* | 1 |
| | Sig. (1-tailed) | .042 | |
| | N | 43 | 43 |

*. Correlation is significant at the 0.05 level (1-tailed).

From the output results above, it is known that the magnitude of the correlation between learning motivation and learning outcomes is obtained by the value of Sig. (1-tailed) of 0.042 < 0.05, then according to the basis of decision-making in the Pearson correlation test, there is a relationship between learning motivation and learning outcomes.

From the four correlation tables above, it can be concluded that there is a relationship between anmotivation and learning outcomes (Sig. 0.002), extrinsic motivation to learning outcomes (Sig. 0.027), intrinsic motivation to learning outcomes (Sig. 0.014), and learning motivation to learning outcomes. (Sig. 0.042).

### *C. Discussion of Research Results*

Based on observations, data collection, and distribution of questionnaires, as well as analysis of the results of the data obtained, it describes a discussion that is in accordance with a review of various theories that are directly related to the issues raised. The discussion based on the author's thoughts is as follows.

The relationship between motivation and learning outcomes for cadets of the Air Traffic Diploma 3 Study Program Class XI Alpha and Bravo obtained a p-value of 0.002, which means the p-value is less than 0.05, so there is a relationship between motivation and the results of the Approach Control Procedure practicum. This relationship is negative (-) which means that the lower the motivation of the cadets, the higher the cadets' learning outcomes. Because cadets who have motivation have no motivation at all. For this reason, the relationship between motivation and learning outcomes is of opposite value.

The relationship between extrinsic motivation and learning outcomes of cadets of the Air Traffic Diploma 3 Study Program Class XI Alpha and Bravo obtained a p-value of 0.027 which means the p-value is less than 0.05, so there is a relationship between extrinsic motivation and the results of the Approach Control Procedure practicum learning. Extrinsic motivation is the most dominant motivation in the cadets of the XI Alpha and Bravo Air Traffic Diploma 3 Study Programs. Cadets with this type of motivation have higher average learning outcomes than cadets with intrinsic motivation. This is due to their demands to master the Approach Control Procedure practicum well. If not, they will have difficulty when carrying out On the Job Training in the fifth semester. For this reason, they are extrinsically motivated to improve the learning outcomes of the Approach Control Procedure practicum.

The relationship between intrinsic motivation and learning outcomes for cadets of the Air Traffic Diploma 3 Study Program Class XI Alpha and Bravo obtained a p-value of 0.014, which means the p-value is less than 0.05, so there is a relationship between intrinsic motivation and the results of the Approach Control Procedure practicum study. Intrinsic motivation comes from within the cadets themselves. This motivation can be in the form of an interest in something. The cadets with intrinsic motivation have a natural interest in the Approach Control Procedure practicum. So they study Approach Control Procedure practicum because they are interested in the subject, not because of external factors such as awards, environment, or work.

The relationship between learning motivation and learning outcomes for cadets of the Air Traffic Diploma 3 Study Program Class XI Alpha and Bravo obtained a p-value of 0.042, which means the p-value is less than 0.05, so there is a relationship between motivation and the results of the Approach Control Procedure practicum. Of course, there is a relationship between learning motivation and cadets' learning outcomes. The higher the motivation of a cadet, the higher the learning outcomes. This is due to the willingness of the individual to achieve a goal.

## V. CONCLUSIONS AND RECOMMENDATIONS

### *A. Conclusions*

The conclusion obtained from the results of the study using the Pearson P-value test of 0.042 <0.05, means that there is an influence between learning motivation on learning outcomes of Approach Control Procedure cadets Diploma 3 Air Traffic Study Program at the Aviation Polytechnic of Surabaya.

From the variable of learning motivation, the writer concludes with the three sub-variables, namely as follows.

*1)* There is a relationship between motivation and learning outcomes of the Approach Control Procedure (P-value 0.002)
*2)* There is a relationship between extrinsic motivation to the learning outcomes of the Approach the Control Procedure practicum (P-value 0.027)
*3)* There is a relationship between intrinsic motivation and learning outcomes of the Approach Control Procedure (P-value 0.014*)*

### *B. Recommendations*

Based on the results of the research that has been concluded above, the authors suggest the following.

*1)* Learning motivation affects cadets' learning outcomes, especially in the subject of Approach Control Procedure practicum. Therefore, cooperation between parties at the Surabaya Aviation Polytechnic is needed, both between education parties in each study program or from the cadets themselves to be able to create

conducive conditions in the teaching and learning process. This can be achieved by, among others, creating a comfortable learning atmosphere so that the cadets do not feel bored. In essence, creating a learning environment and learning model so that cadets are interested and motivation arises in cadets.

*2)* The cadets themselves should be able to motivate themselves more to be able to discipline themselves by respecting the time and utilizing free time as much as possible in order to obtain better learning outcomes than before. Such as sorting out activities that should be done so as not to override their obligations to study.

*3)* Fellow cadets should share knowledge with each other. Either to fellow classmates or between seniors and juniors. For fellow friends, studying Approach Control Procedure practicum can be done together in the dormitory or class. For example, conducting a scouting simulation in a dormitory. The cadets can also ask their seniors about the Approach Control Procedure practicum course, how seniors study, and the previous materials, so that the cadets get information that can be used as guidelines.

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