Enhance Accounting Student's Academic Skill By Implementing Project Based Learning on Information Technology and Computer Programming Subject

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ABSTRACT

The current changes in learning activities that support online learning have brought new challenges. One of these challenges is achieving learning objectives such as students' understanding and critical thinking as part of their academic skills. Therefore, this study aims to evaluate the implementation of project-based learning (PBL) methods on the Information Technology and Computer Programming subject. Furthermore, Project-Based Semester Learning Plan (SLP) has been developed and implemented on this subject since September 2021. *There are two indicators used to evaluate the implementation of Project-Based learning on this subject: student perception and the achievement of learning outcomes that imply in the distribution of assignment scores.* Online questionnaires are shared with the thirty-two students who enrolled in this class to see students' perceptions. The result shows that PBL method has a significant impact on increasing students' understanding of Ms. Excel application use for data processing. In addition, there are three top skill advancements experienced by students during PBL, namely: communication skills, data processing and technological skills, and teamwork. However, the most preferred learning method chosen by the students is direct explanation by the lecturer using zoom (teacher-centred learning). While only one fifth of the students preferred project-based learning as the best learning method. Regarding the distribution of assignment scores and the achievement of learning outcomes, this study also found that all students have high scores, ranging between 75 to 100.

Keywords: Project-based learning, Accounting, Information technology

1. INTRODUCTION

The COVID-19 pandemic has brought many changes in our life, including on how learning activities are carried out. Social distancing policies have encouraged educational institutions to choose online learning as the best solution for conducting the education at various levels. This changing has brings many challenges in achieving learning objectives, especially in students understanding, innovation and critical thinking as part of their academic skill. There are various challenges that must be faced to carry out this online learning process. Some of them are choosing how to present the material in an interesting way, choosing strategies in conducting active discussions and full participation from students, providing solutions in dealing with various obstacles

that arise unexpectedly such as internet network problems, data availability, and others. These challenges become more complicated for teaching the subject with more practical content such as Information Technology and Computer Programming in Accounting department.

The Information technology and Computer Programming (ITCP) is a compulsory subject offered in the third semester for students at Accounting Study Program. It is a basic course that the accounting students should pass, especially for those who choose accounting information systems as their specialization. This subject aims to provide students with an understanding of the various uses of computer technology in offering data and computing

activities in order to facilitate works related to numbers and simple business data. This course trains the students to be independent in defining, analysing and managing data in the form of simple databases from various types of businesses. In particular, moreover, the subject explains the basic concepts of information technology's role in data calculation, processing, and database design. It presents the inherent risks and challenges in using technology in data processing and data management. Moreover, it provides students with the ability to use functions and features of Microsoft Excel and Microsoft Access application related to data processing and data management.
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This course is essential because it gives the accounting students technical skills for understanding and doing the exercise of other courses in accounting department. Those skills is essential for students to be a good accountant. As [1]oritz & Stoner (2014) explained, accountants are experts at processing and producing information for internal and external users and were among the earliest users of computers technology, especially applications devoted to recording streams of transactions and converting them into reports containing valuable information for monitoring and evaluating operations. Subsequently, this useful and valid information will support better business decision-making. Practically, however, those course objectives above are very difficult to be attained, as the lecturer facing many challenges in conducting the course, especially during the Covid-19 pandemic. Most participants are sophomore students with basic accounting knowledge and basic experience in financial data calculation and process. Many students never have specific experience in conducting data calculation and processing using Microsoft Excel, as most of them use the application only limited to data entry and data storage. There are only few student who ever have experience in conducting simple mathematical calculation using this particular computing program. Furthermore, none of them have ever had experience in attending the technical course that is carried out through online teaching and learning program.

Meanwhile, the Information Technology and Computer Programming course were previously carried out in a computer laboratory so that the lecturers fully monitor the practice and making of the exercises. Each class is also accompanied by two laboratory assistants who will supervise and help students who have difficulty in doing exercises and practices. Moreover, the faculty provides computer facilities with the updated version of applications so that they would not have problems with the features or formula compatibility in processing their data. In contrast, due to online learning practice, students in this subject lose some beneficial things for offline learning (Luar Jaringan), such as the ease of interaction to directly ask questions, help each other, and discuss the practice questions. For that we need a way to keep them excited about calculating and processing business data using Microsoft excel and a method to encourage them to discussing the exercises and exploring the Ms. Excel formulas and features in many business cases. This condition makes it difficult for students to understand how data processing and calculations are carried out with real business data. They also find it challenging to practice the various formulas that they have learned and which they can explore related to accounting and financial analysis for different types of small and medium businesses. In addition, they need to practice their ability to convey their analysis of the data calculations' results they do.

Regarding this, [2] clearly stated that the history of "learning by doing" represents the need for informed discussions about problem-based and project-based approaches. Projects especially have the means to make learning more applicable and readily applied worldwide. Moreover, Barron also defines the term project as a broad class of learning experiences. The potential benefit of using project-based learning is also supported by [3], which stated that a significant amount of learning/skills could be gained by the students within a project. Based on the benefits that project based learning can offer, this study tries to use it as a new learning method in information technology and computer programming subject at accounting department, Andalas University in this semester. The project-based learning method has been applied since the beginning of september 2021. This study aims to evaluate the implementation of project-based learning in *the information technology and Computer Programming (ITCP)* subject.
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1.1 Descriptive of Information Technology and Computer Programming Subject

Infrmation Technology and Computer Programming is a compulsory subject in the third semester and a core subject in accounting study program. This subject aims to provide students with an understanding of the various uses of computer technology in simple business data processing and computing activities. In addition, this subject also encourages students' independence in defining,

analyzing and managing data in the form of simple databases from various types of businesses.

After studying this subject, the students should be able:

1) to explain the importance of using computer technology in organizational information systems, both the significant role in data processing and the important role in the basic analysis of the use of the technology.
2) to understand all the basic functions/formulas contained in Ms. Excel for calculations and data processing. Furthermore, they also are able to practice these functions/formulas in various data calculation exercises in Ms. Excel.
3) to understand the importance of data management systems using databases.
4) to understand and master the steps they have to do in designing a database using Ms. Access. Further, they were able to explore the features of Ms. Access, which will be useful in assigning value to the database they designed.
5) to design simple databases for various business organizations that they choose to do their projects.
6) to explain the principles of computer control in general regarding the use of computing technology and database design, especially the use of Ms. Excel and Access and the appropriate risks and control measures

1.2 The Contribution Of The Subject To Graduate Learning Outcomes

Universitas Andalas Accounting Study Program has formulated the graduate profile that relied on its vision and mission. The graduate profiles of this program are *"Having strong analytical skills and ability to exercise professional judgments in accounting and related fields by taking into account sustainability and ethic in decision making as well as committed to life-long learning."* Based on this profile, it is then divided into five attributes of the graduate profiles, which are (1) have strong analytical skills, able to considering principles of (2) sustainability, and (3) ethics in (4) exercising professional judgments, and have a strong commitment to (5) life-long learning. Besides that, The Accounting Study Program has also defined then Graduate Learning Outcomes (GLO), as follows:

Table 1. Graduate Learning Outcomes

No.	Domain of Learning	Graduate Learning Outcome (GLO)
A.	Knowledge Proficiency	1: Having knowledge and skills in accounting, assurance, finance, & taxation 2: Having knowledge and skills in governance, risk & compliance (GRC)
B.	Work Skill Capability	3: Able to apply knowledge and skills in accounting, assurance, finance, & taxation 4: Able to apply knowledge and skills in governance, risk & compliance (GRC) 5: Able to utilize information systems and technology
C.	Managerial Competency	6: Able to exercise professional judgment 7: Able to work in a team 8: Having good communication skill, both oral and written
D.	Value And Attitude	9: Having a strong character, attitude, and integrity
		10: Able to adapt current and future issues in accounting, finance, assurance, and taxation

Similar to all subjects in the Accounting study program, The *Information Technology and Computer Programming* subject has been designed to contribute to the GLO achievement. In this regard, the contribution of CPMK of this subject to GLO is as follows:

1. Students are able to explain the importance of using computer technology in organizational information systems, both the significant role in data processing and the important role in the basic analysis of the use of the technology
2. Students are able to understand all the basic functions/formulas contained in Ms. Excel for calculations and data processing. Furthermore, they also are able to practice these functions/formulas in various data calculation exercises in Ms. Excel.
3. Students are able to understand the importance of data management systems using databases.
4. Students are able to understand and master the steps they have to do in designing a database

using Ms. Access. Further, they were able to explore the features of Ms. Access, which will be useful in assigning value to the database they designed.

5. Students are able to design simple databases for various business organizations that they choose to do their projects.

6. Students are able to explain the principles of computer control in general regarding the use of computing technology and database design, especially the use of Ms. Excel and Access and the appropriate risks and control measures.

2. METHODS

Project-based learning researches can be categorized as classroom action research [4]. Meanwhile, [5] defines Classroom Action Research (CAR) as the implementation of alternative research that can be done easily during the teaching and learning process. This type of research is believed to be able to strengthen lecturers' skills in teaching with a simple methodological research model. Project-based learning is also a form of constructivist and collaborative learning in which the learning process is student-centred. This method allows students to work together to solve problems and learn from each other to build their knowledge [6]. Therefore, this method can be the best solution for lecturers and students in carrying out online learning through this subject without losing the opportunity to practice all academic skills in financial and non-financial data processing for small businesses. Besides, students also get the freedom to think critically, innovate and experience various soft skills in completing the given project.

This study was carried out in three stages:

a) Planning

At this stage, the lecturer prepares a lesson plan in the form of a Semester Learning Plan (SLP). In this SLP the researcher adds a project-based method information and the assessment scheme. The SLP contain detailed information on subject descriptions, graduate profiles, learning objectives, learning methods, student assessments, course codes of ethics, topics discussed at each meeting, weekly assignments, Major Projects and assessments' schemes, and the contributions SLP on GLO. In addition, SLP explains the media used in the learning process.

In implementing PBL, this course combines synchronous and asynchronous learning methods, using various media, such as zoom meetings, WhatsApp applications, G-Form, and e-learning systems. The synchronous learning model is carried out through zoom meetings and discussions via Whatsapp groups. While the asynchronous method is conducted using students' independent study instructions. The Instructions and supporting materials are shared through I-learn and WA groups so the students can access them anytime and anywhere.

b) Implementation

In this stage, the SLP is implemented from 14 September, 2021 to December 20, 2021. Before being implemented, the SLP has been distributed to students through the e-learning system and discussed in the first week meeting. Through this meeting, students have a detailed explanation about the project they will be working on and get the opportunity to ask questions relate to the implementation of learning activities and project making.

c) Evaluation

To evaluate the implementation of this method, the following indicators are being used as measures, which are: (1) the student perception of this learning method; (2) the achievement of learning outcomes implies in the distribution of assignment score.

3. RESULT AND DISCUSSION

This study starts to implement project-based learning on the Information Technology and Computer Programming subject on September 14, 2021, with 32 class participants. The schedule for this subject is every Tuesday at 10.10 am. Moreover, the participants are dominated by female students with 59% and most of them are located in the province of West Sumatra with a total of 25 students (78%).

Table 2. Profile of Participants

	No. Of Respondents	Percentage
Gender		
Male	13	41%
Female	19	59%
Location		
in West Sumatera Province	25	78%

out of West Sumatera Province	7	22%
How many times you have ever taken this subject?		
For the first time		
For the second time	27	84%
	5	16%

The evaluation of this method has been carried out using three indicators as described before, which are (1) the student perception of this method, (2) the achievement of learning outcomes implies in the distribution of assignment score.

The following are the results of the evaluation:
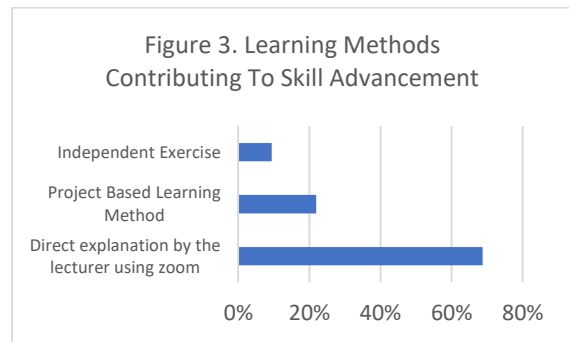
(1)   The Students Perception

The student perceptions were collected through an online questionnaire that was sent in the sixth week of the lecture. All students are participated. Below are the student's perceptions on the importance of ITCP subject in supporting their accounting skill.
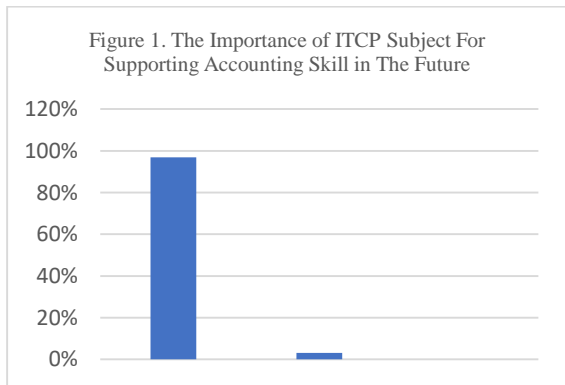
Figure 1. The Importance of ITCP Subject For Supporting Accounting Skill in The Future

The student perceptions were collected through an online questionnaire that was sent in the sixth week of the lecture. All students are actively participated. Below are the student perceptions on the importance of ITCP subject in supporting their accounting skill. From the Figure 1 above, it can be seen that all students (100%) acknowledged the importance of this course in strengthening their technical accounting skills.

Figure 2. Student Perception On Project-Based Learning Method
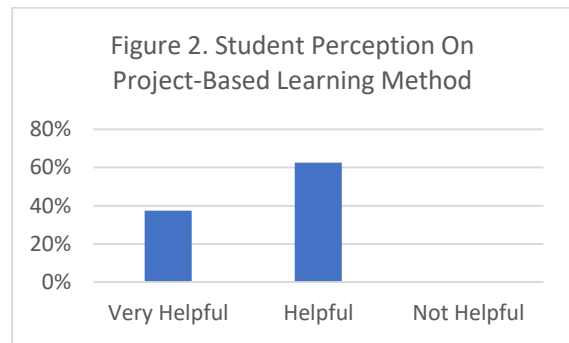
Furthermore, when students were asked about their perceptions on project-based learning, all students admitted that this method really helped them in understanding how to apply business data processing in Ms. Excel application as well as helping them to learn new skills.

Figure 3. Learning Methods Contributing To Skill Advancement

In addition, Figure 3 shows the students' perception on learning methods contributing to their skill advancement. According to the existing learning methods, most students still choose the teacher-centered learning method using zoom as their preferred learning method that contribute to their skill advancement with a percentage of 69%. Meanwhile, another 22% choose project-based learning and the remaining 9% prefer a learning model with weekly assignments.

Figure 4. Types Of Skill Advancement Through Project-based learning
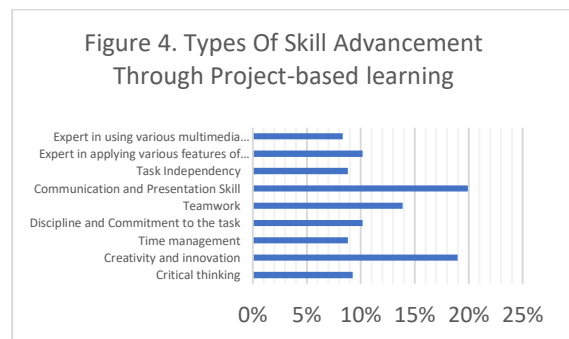
Furthermore, Figure 4 shows detailed information about the skills that students thought they have

acquired through project-based learning. The three skills they chose the most were communication skills (18%), data processing skills using various technological tools (17%), and teamwork (13%). However, other skills are also considered important by students with a not too much difference in percentage for each option. Moreover, all students does not choose a single skill that deemed vital to them in this PBL Instead, they chose a combination of more than three skills that they believed they would gain from learning through this project.

(2) The distribution of assignment score

Besides student perception, the distribution of assignment scores is also used to evaluate project-based learning methods. The following is the distribution of assignment score (on average) during this half-semester:

Data in Figure 5 shows that twentyfour students (75%) get an average score of 86 and more, while eight students (25%) get an average score between 75 and 85. None of them get an average score below 75. These results confirm the student perception result (as described in Figure 2).

Figure 5. Students' Score In Group Project Evaluation
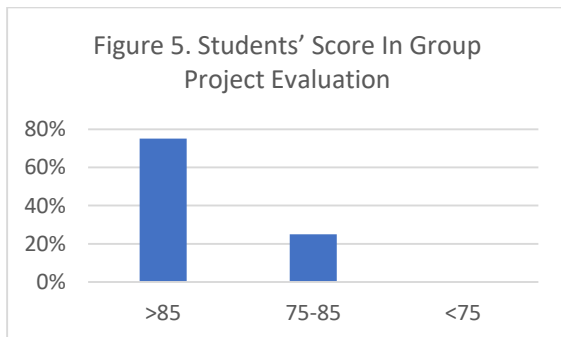
4. CONCLUSION

This study aims to evaluate the implementation of project-based learning in Information Technology and Computer Programming (ITCP) subjects. There are two indicators used to evaluate this subject, namely (1) students' perception of this method (2) achievement of learning outcomes which have implications for the value of student projects. This study finds some following interesting findings.

First, based on students' perceptions, all participants believed the importance of this subject to strengthening their technical accounting skills. Second, all students also believe that the given

project helps them to enhance their knowledge and practice their academic skills. Nevertheless, the most preferred learning method chosen by the students is direct explanation by the lecturer using zoom (teacher-centred learning), while only one fifth of the students preferred project-based learning as the best learning method. In addition, there are three top skill advancements experienced by students during PBL, namely: communication skills, data processing skills using various technological tools, and teamwork.

On the other hand, the assessment of PBL score shows that all students have good experienced through the PBL method. The high average scores of the project reflects the positive experience from the students by using this learning method. This condition is also supported by their average assignment scores, which shows that they all get average scores between 75 to 100. Therefore, based on the explanation above, it can be concluded that the implementation of project-based learning on Information Technology and Computer Programming subject has been going as planned and shows satisfying results.

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