

# “IMPROVE” Methods Implementation to Improve the Computer Skills and Information Management Learning Outcomes of Vocational School Students

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**Submission date:** 12-Jun-2023 04:05PM (UTC+0700)

**Submission ID:** 2114369416

**File name:** Manoppo\_KI\_7\_IMPROVE\_Methods\_Implementation....pdf (222.5K)

**Word count:** 3626

**Character count:** 19924

# “IMPROVE” Methods Implementation to Improve the Computer Skills and Information Management Learning Outcomes of Vocational School Students

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**Abstract**—This study aims to improve the learning outcomes of class X Multimedia B students of SMK (vocational high school) Negeri 1 Tondano through the IMPROVE learning method. The method used in this research is Classroom Action Research (CAR). In this Classroom Action Research, the subject of the study was XB Multimedia class students consisting of 33 students with 20 female students and 13 male students. The results showed that the learning process with IMPROVE learning methods can improve student learning outcomes. Before using the IMPROVE Learning Method, Pre-Test was held with 21.21% achievement, with the highest score is 90 and the lowest score is 35, the total number of students who completed this learning method are 7 students and 26 students are unable to complete with an average score of 62.42. After being given the IMPROVE learning method on the material of the Number Processing System (Microsoft Excel) in the first cycle, the achievement increases to 45.45%. The highest score is still 90 and the lowest score is 40, there are 15 students that complete this method and the 18 students unable to complete with 67.42 as average score. After evaluation of the first cycle, the researcher continued to apply the IMPROVE method in cycle II, the results showed an increase in student learning outcomes with 84.85% achievement. The highest score increased to 95, and the lowest score was 45. The total number of students who able to completed were 28 students, and the least completed were 5 students with an average score of 75.30. The IMPROVE Learning Method have succeeded in improving the learning outcomes of X Multimedia B class students of SMK Negeri 1 Tondano. This study concludes that the IMPROVE learning method could be use in the teaching and learning process to improve student' learning outcomes.

**Keywords**—IMPROVE method; computer skills; information management learning; vocational school

## I. INTRODUCTION

Information Technology developments and advances are strongly influenced by computers subjects and information management in schools [1]. In Indonesia, therefore computer science and information management specifically taught especially in vocational high schools in the Computer Skills and Information Management subjects.

The concept of computer science and information processing is highly related with computer use [2]. One of subject is operating Microsoft Excel Software. In this subject, students taught to use number processing application that is commonly use and easy to use. Even so, most of the students who participated in the subject have unsatisfactory learning outcomes. Observation data conducted at SMK Negeri 1 Tondano class X Multimedia B showed that only 21.21% of students who successfully achieved the passing grade (KKM) of 75 in the Computer Skills and Information Management subject in the school year of 2015/2016.

Conventional models and methods caused the low student learning outcomes in Computer Skills and Information Management subjects. The conventional model placed students as passive participants who just wait from the teacher [3]. Students listen more to the teacher's explanation [4]. Students rely more on memorization without understanding the concept of the materials given. Then new learning methods needed that can make students more active in learning [5], especially in learning materials to operate Microsoft Excel Software.

Learning methods could be interpreted as a method used to carry out plans that was prepared in the form of real and practical activities to meet learning objectives [6]. Whereas Sagala argues, learning method is a method used by teachers in organizing classes in general or in presenting lesson material in particular [7].

The IMPROVE method is one of the learning models based on the theory of social cognition and metacognition. This learning method was first developed by Mevarech and Kramarsky [8]. The IMPROVE method is one of the strict learning methods in implementing the cognitive paradigm. IMPROVE is a learning step method in every word in the acronym. Based on the acronym, the stages in this method could described as follows: 1) Introducing new concepts, Introduction to new concepts oriented to students' initial knowledge by giving metacognition questions in heterogeneous groups. 2) Metacognitive questioning & Practicing, at this stage students solve examples of problems that have been given with the help of metacognition questions. 3) Reviewing

and Reducing difficulties, obtaining mastery, at this stage a review of student answers, and reviewing the personal role in the group. 4) Verification, which identifies students who considered to have reached the expertise level. This process requires feedback on identification results. 5) Enrichment, the enrichment phase includes two types of activities, namely improvement activities given to students who have not reached the expertise level, and enrichment activities are given to students who have reached the expertise level. Learning activities with the IMPROVE method was held on small groups in heterogeneous classes.

Metacognition as a basis thinking the IMPROVE method could be understood as a form of ability to look at oneself so that what he can optimally controlled. The metacognition development is one of them by encouraging children to assess and observe what they actually know and have done, followed by reflecting on the results of the self-observation [9].

The term "metacognition", which consists of the word "meta" which means relating and "cognition" which means awareness. Westwood defines "Metacognition with the term" understanding and monitoring one's thinking ". In simple terms, "Metacognition is the awareness of our thinking so that we can perform specific tasks, and then use this awareness to control the tasks we do" [10]. Can be concluded that metacognition is the students' awareness and thinking skills so that they are able to monitor and control their thinking processes in solving problems, to ultimately to find the solutions. The form of a person's level of metacognition is the existence of these following skills, namely: problem solving, decision-making, critical thinking, creative thinking.

The advantages of IMPROVE learning methods are as follows: 1). This learning method can encourage students to get to know a new concept delivered by a teacher without ignoring the concepts that are already known to students. 2) This learning method can improve students' understanding of the material through training and metacognitive questions posed by the teacher. 3) This method can increase student' activity in expressing opinions and asking teachers and other students during the learning process. 4). This method provides enrichment to increase students' knowledge to understand new concepts. Can be stated that the IMPROVE method is an innovative method in the Computer Skills and Information Management subjects learning process.

IMPROVE method implementation in Computer Skills and Information Management subjects learning will help students in developing computer skills, emphasis on the process of forming concepts to increase learning activities, as well as providing broad training opportunities to students in solving problems.

Furthermore, the Computer Skills and Information Management subjects learning phase uses the IMPROVE method which includes: 1). The teacher delivers new concepts using various types of metacognition questions. 2). Students practice answering their metacognitive questions in solving systematic problems. 3). The teacher organizes feedback-improvement and enrichment sessions. 4). All student activities in this method are carried out in small heterogeneous groups.

The IMPROVE method has not yet been implemented in SMK Negeri 1 Tondano, especially the material that operates the Microsoft Excel Software. Considering this method uses an active learning approach, it's expected that the use of this learning method can improve student' learning outcomes in Computer Skills and Information Management subjects in Vocational High Schools.

Student learning outcomes are the main evidence of the learning process because it will show a change in behavior as a real reflection of learning activities. After being taught, understanding the concepts will appear after going through a certain measurement technique, such as measurement through examinations.

Can be concluded that learning outcomes are evidence of learning efforts undertaken by a student related to what student has learned. Benchmarks for students who have learned are based on the notion of learning productivity. Learning productivity is a student's ability to master, use and assess attitudes, knowledge and skills productively.

## II. METHODS

Classroom Action Research (CAR) is the method used in this study. In this Classroom Action Research, the subject of the study was X Multimedia B class students consist of 33 students with 20 female students and 13 male students.

To avoid misunderstanding of the variables in this study, it is necessary to provide operational definition as follows: 1). The IMPROVE (X) Learning Method is an innovative method in the Computer Skills and Information Management subjects learning process designed to help students develop their various computer skills, and improve their learning activities using an emphasis on the process of forming a concept. The IMPROVE method contains five main stages: Introducing new concepts, Metacognitive questioning & Practicing, Reviewing and Reducing difficulties, Obtaining mastery, Verification and Enrichment. 2). Computer Skills and Information Management subjects learning outcomes (Y) are scores or values obtained by students with the IMPROVE Learning Method on the learning material of Operating Microsoft Excel Software.

X → Y

Details : X = IMPROVE learning method  
Y = KKPI learning outcomes

Research data collection was carried out by direct observation of the IMPROVE learning process, conducting evaluation through practicum and written tests. In this Class Action Research, the teacher will be seen by the indicator of his work in addition to the students. Indicator of success in research if 70% of students achieve minimum completeness criteria and 70% of students are actively involved in learning.

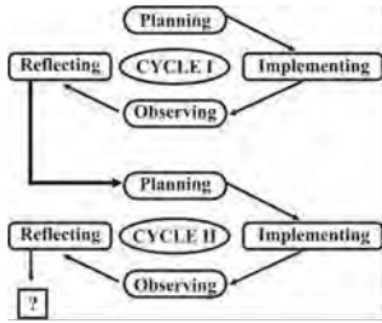


Fig. 1. Research design model.

The research design model according to Arikunto, et al begins with the planning, implementation, observation and reflection stages (in cycle I), then the results of reflection are continued in cycle II with the same pattern. If the second cycle has not reached the Minimum Completeness Criteria (MCC), it can be done in the next cycle with the same pattern.

### III. RESULT AND DISCUSSION

The pre-cycle results that obtained by the researcher before applying the IMPROVE learning method at SMK Negeri 1 Tondano, especially the X Multimedia B class are as follows:

TABLE I. STUDENT LEARNING OUTCOME RECAPITULATION

| No. | Test Result                    | Achievement |
|-----|--------------------------------|-------------|
| 1   | Highest Score                  | 90          |
| 2   | Lowest Score                   | 35          |
| 3   | Average Score                  | 62,42       |
| 4   | Student Able to Complete       | 7           |
| 5   | Students Unable to Complete    | 26          |
| 6   | Learning Completion Percentage | 21,21%      |

Based on Table 4.2 it is known that for the average value of the pre-cycle results of class X Multimedia B students of Tondano State Vocational High School 1 is 62.42 while for the completion achieved only 21.21%. From these results showed that completion of student learning is still low and has not achieved the expected learning outcomes.

#### A. Cycle I

Action Planning consists of 4 times meetings (including evaluation) with 2x45 minutes each face-to-face. The steps of researchers in Cycle I are as follows:

- Analyzing the curriculum to specify standards and basic competencies that would be provided to students
- Creating Learning Implementation Plan (LIP) for teaching work process as expected as well as a guide teacher in implementation in the learning
- Prepare media and teaching materials
- Operation of spreadsheet software general explanation
- Develop research formats

- Compile teacher observation sheets about learning implementation to specify student learning outcomes.

Cycle I action implementation will be carried out according to the scenario of learning that arranged by conveying the learning objectives and preparing students that adjusted to the teaching and learning process applied to the learning model, followed with material presentation.

Implementation Cycle I action is carried out by dividing students into several heterogeneous groups, then researcher provide new concepts and students discuss what has been discussed and explained. Then students are directed to understand the function of numeric processing software while running document files according to instructions through direct practice in the laboratory. Students in this learning have the freedom to seek and explore new knowledge in solving problems according to the material. The researcher closes the learning process by providing feedback, improvement, and enrichment.

In Cycle I can be concluded that students are not familiar with the atmosphere or learning conditions with the IMPROVE learning method so students are still less active and hesitant to ask questions during the research process. The researcher took the initiative to give an explanation about the steps in working on the practical material module in the group to overcome it.

Based on observations and tests in the implementation of Cycle I, there was an increase in student learning outcomes from the results of the previous cycle. Some students have understood the method given so that in the teaching and learning process they actively ask questions, answer teacher's questions, listen to the teacher's explanation or record small things that are considered important. But some students are still lazy when the learning process takes place, and are less active in answering questions and lacking in asking questions.

TABLE II. STUDENT LEARNING OUTCOMES RECAPITULATION

| No. | Cycle I Evaluation Results     | Achievement |
|-----|--------------------------------|-------------|
| 1.  | Highest Score                  | 90          |
| 2.  | Lowest Score                   | 40          |
| 3.  | Average Score                  | 67,42       |
| 4.  | Student Able to Complete       | 15          |
| 5.  | Students Unable to Complete    | 18          |
| 6.  | Learning Completion Percentage | 45,45%      |

After seeing the evaluation results of 33 students, the grades range obtained by each student was between the range of 40-90. From this range of values, there are still 18 students who are unable complete the subject. While the criteria for learning completion is 70%. From these results, can be stated that class X Multimedia B has not yet reached the learning completion.

Based on the results of the analysis and evaluation of the cycle I research activities, the review was: a) In the implementation of learning, researchers sought IMPROVE learning methods according to the target. b) In the learning evaluation, teacher carries out assessments according to students' abilities. The results of Cycle I confirm the need for

research to be continued in the next round, namely Cycle II research.

**B. Cycle II**

Action Planning, Plans in Cycle II based on re-planning of cycle I, are: 1) Researchers pay attention to deficiencies in Cycle I. 2) Researchers will further encourage students to know and understand new concepts in order to understand more, by providing motivation. 3) Researchers actively involve students in drawing conclusions on the material provided. 4) Material is more clarified so that students more easily understand the material. 5) More intensive in guiding students who experience difficulties during practice.

In Cycle II, researchers prepare the students to take part in learning without having to play or laze around while doing the assignments. This initiative is organized based on the basic competencies that are specified and accordance with the initial planning, it is expected that Cycle II learning activities will encourage more active students. Researchers also conduct an investigative type approach to students to find out what material has not been understood and what material that they want to learn again.

The results of observations in Cycle II show an increase in student activity in learning even though there are some who are still less active. Student learning outcomes in this Cycle II have looked better than cycle I. This is indicated by the increase in student activity and on the results of cycle II evaluation. Students have become more prepared, more active, and more directly involved in the learning process.

TABLE III. STUDENT LEARNING OUTCOMES RECAPITULATION

| No. | Cycle II Evaluation Results   | Achievement |
|-----|-------------------------------|-------------|
| 1.  | Highest Score                 | 95          |
| 2.  | Lowest Score                  | 45          |
| 3.  | Average Score                 | 75,30       |
| 4.  | Student Able to Complete      | 28          |
| 5.  | Students Unable to Complete   | 5           |
| 6.  | Leaming Completion Percentage | 84,85%      |

Based on the cycle Table 4.6 it is known that there is an increase in cycle learning outcomes. Where the average score of students in the second cycle reached 75.30 with a percentage of completion of 84.85%. From the results of learning cycle II, the obstacles found in cycle I can be overcome because the enthusiasm of students in following the teaching and learning process increases, students also become more active and independent in solving problems. This is evidenced by student learning outcomes in cycle II which shows significant improvement and indicators of basic competencies in learning can be fulfilled, although there are still some students who have not achieved the required "KKM".

**C. Discussion**

Reviewing the results of the pre-cycle initial conditions were found that there were 26 students who did not reach the graduation standard, only 21.21% or 7 students who reached the standard of completion with 62.42 average score. After the action was taken, the results of the evaluation of Cycle I, the

number of students who completed an increase to 45.45% or 15 students with an average score of 67.42. This result experienced in cycle I. However, the results of the evaluation of Cycle I did not reach the specified target, there are several of students who experienced learning completeness as much as 70%. Less optimal student learning outcomes in cycle I because researchers have not mastered the condition of students and there are still many students who are not active or lazy.

In the second cycle, the meeting consists of 4 meetings, each meeting has 2 lesson hours (2x45 minutes), 3x meetings to discuss the material as well as practice or take a daily score with an open question and answer session with students and written tests and 1x last meeting for data retrieval evaluation.

In this second cycle, students who achieved graduation standard scores increased to 28 students or 84.85% and only 8 students did not achieve "KKM". Based on the results, it can be explained that the application of IMPROVE learning methods in teaching and learning activities is effective to achieve classical student learning completion.

The following is a table of completion and percentage of student learning outcomes from pre-cycle, Cycle I and Cycle II:

TABLE IV. STUDENT LEARNING OUTCOMES RECAPITULATION

| Learnin g Results | Highest Score | Lowest Score | Average Score | Studen t Able to Com plete | Studen t Unable to Compl ete | Compl etion Percen tage |
|-------------------|---------------|--------------|---------------|----------------------------|------------------------------|-------------------------|
| Pre-cycle         | 90            | 35           | 62,42         | 7                          | 26                           | 21,21%                  |
| Cycle I           | 90            | 40           | 67,42         | 15                         | 18                           | 45,45%                  |
| Cycle II          | 95            | 45           | 75,30         | 28                         | 5                            | 84,85%                  |

Thus, Cycle II has fulfilled the criteria for completion of learning outcomes, meaning Classroom Action Research was a success.

**IV. CONCLUSION**

Based on the results of this Class Action Research can be concluded as follows: The learning process using IMPROVE learning methods can improve student learning outcomes. Before using the IMPROVE Learning Method the percentage of success of students of Class X Multimedia B of Tondano State 1 Vocational High School was 21.21%, with 7 students able to complete, and 26 students unable to complete, with an average score of 62.42. After being given the IMPROVE learning method on the material of the Number Processing Process (Microsoft Excel) in Cycle I, learning outcomes began to increase to 45.45%. With the 15 students able to complete and 18 students unable to complete with average score of 67.42. After reflection in the first cycle, the researcher continued the application of the IMPROVE method in cycle II. After evaluating the second cycle, students' learning outcomes were increased from Pre-Cycle and Cycle I to 84.85%, with 28 students able to complete and 5 students left, with average

score of 75.30. The IMPROVE Learning Method application is said to be successful in improving the learning outcomes of students of class X Multimedia B at SMK Negeri 1 Tondano.

Based on the conclusion of this Classroom Action Research, it is recommended for teachers and students as prospective teachers to choose a good and appropriate learning method, one of which is the IMPROVE method. The teacher is also advised to always pay attention to the discipline of students in the teaching and learning process and neatness in the classroom as well.

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