Role of Accelerated Learning Technique in Achieving the Minimum Mastery Standard of Accounting Subject

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Abstract—**The purposes of this study are to describe the profile of students' prior knowledge and to explain the role of accelerated learning technique and conventional technique in accommodating students' prior knowledge to achieve minimum mastery standard. This quasi experimental study uses two-factor measurement with a factorial version of nonequivalent pretest posttest control group design. The Variables in this study are: minimum mastery standard, instructional type, and prior knowledge. The total samples are 120 students and each treatment decided 24 subjects as analysis unit. Base on the analysis, the results of the study are the profile of students' prior knowledge varies in the recording stages and reporting stages, and accelerated learning technique and conventional technique accommodate prior knowledge in achieving minimum mastery standards of accounting subject.**

Keywords—instructional type, prior knowledge, minimum mastery standard

I. INTRODUCTION

Conducive and pleasant conditions of learning must be created during the learning process. Creating these conditions is fully under the control of educators. Educators must be able to change their paradigm from being an authority to a learning mediator. A paradigm shift also occurs in the accounting course that is full of concepts. Current conditions indicate that, learning still focuses on the role of students. Such learning has the consequence of understanding temporary concepts. Understanding and mastery of concepts in accounting starts from the elementary level to the advance level. Students who do not understand the concept at the basic level will continue to a higher level. At the basic level, the process of understanding the concept has begun from the recording stage to the reporting stage. It means that in basic level, accounting learning concepts have been embedded that must be understood by students thoroughly. The completeness of understanding of a student will lead to the achievement of minimum mastery standard. Achievement of minimum mastery standard depends on several variables, one of which is the learning technique applied by educators. One of the learning outcomes of accounting learning in diploma programs is being able to produce financial information to be conveyed to users as the basic for business entities decision making. The outcome has not been fully realized, it needs to be reformed in all lines. Teaching materials that are not yet relevant to support the learning process are one that needs to be addressed immediately. The available teaching materials are less representative as supporting learning materials. The learning process and teaching materials should be adapted to the characteristics of students in an effort to achieve minimum mastery standard. The input characteristics of students who have an accounting background in the 2018/2019 academic year are only 13.00%. Whereas, 87.00% do not have an understanding of accounting (inadequate prior knowledge). The logical consequence of these initial conditions, the learning process largely determines the quality of learning. The learning process cannot be done uniformly, given the ability of students vary greatly, especially in the first semester. Learning must be fun, students do not feel that learning is torture. Learning that is being applied tends to make students passive and resigned. Regarding the accounting learning process, there are several problems such as: (1) lack of representative teaching materials, (2) passive and less creative learners, and (3) lack of attention of educators to students' prior knowledge. The lack of representative teaching materials and student creativity are a consequence of conventional learning. The initial characteristics of students are reflected in prior knowledge. Prior knowledge has a strategic role in creating meaningful learning. Prior knowledge gets the attention and consideration of educators in designing the learning process. Humans try to understand their world by synthesizing new experiences into knowledge that was previously understood [1]. The most important factor influencing learning is what students already know [2]. Students who are academically disadvantaged, competitive atmosphere greatly reduce their learning motivation and always become their psychological torture [3]. Prior knowledge has been claimed to be an important key to achieving effective education, therefore we are interested in exploring whether prior knowledge contributes to achieving minimum mastery standard.

Educators need to design learning techniques that can lead to a conducive academic atmosphere and that can accelerate understanding. One of them is the accelerated learning technique. Accelerated learning is the acceleration and improvement of learning, has resulted in many accelerating understanding of various learning materials, which have proven to be very effective [4]. Accelerated Learning is the ability to absorb and understand new information quickly and master that information [5]. Research on accelerated learning found that accelerated learning plays a strategic role in learning. There is a significant effect of the accelerated learning model on students' achievement [13].

Accelerated learning design provides opportunities for students to achieve minimum mastery standard. The Bali State Polytechnic is one of the institutions providing vocational education that has implemented an new curriculum. The consequence is that there is a reduction in the number of meetings in a week, from twice a week to once a week. This condition is a serious challenge for education practitioners to design effective alternative learning techniques. Teaching material must be taught thoroughly and on time, and minimum mastery standards can be achieved. This condition is a challenge for education practitioners. Based on this, one of the learning techniques to achieve the minimum mastery standard is the accelerated learning technique. Thus, the accelerated learning technique was chosen as an experimental study in an effort to achieve minimum mastery standard by paying attention to the students' prior knowledge. The design of this learning process is expected to be able to facilitate students to achieve minimum mastery standard. Achievement of minimum mastery standard is very possible to apply in vocational education through the accelerated learning technique, even though there is a change in curriculum structure. Support for adequate educational resources from the institution level to the department level is very possible to apply instructional alternative in order to produce competent graduates. Based on the description above, then the problems that have been identified can be formulated as follows: (1) how is the profile of prior knowledge of students in taking accounting learning?, (2) how is the role of accelerated learning and conventional techniques in accommodating prior knowledge to the achievement of minimum mastery standards?.

II. METHOD

A. Research Design

The researcher used the experimental research method. The research design used in this study is nonequivalent control group design [6]. The design of the analysis of this study was a 2x2 factorial design. The sorting factor is prior knowledge as a moderator variable. Sorting is divided into two levels, namely adequate prior knowledge (40% from above) and inadequate prior knowledge (40% from below). Determination of samples in this study using probability sampling using cluster sampling

techniques.

The data collection method used is conducting tests to obtain prior knowledge level data and achieving minimum standards of mastery. The dependent variable is the output produced as a result of the influence of independent variables and moderator variables. The dependent variable in this study is the achievement of minimum mastery standard. While the independent variable is an instructional type consisting of two dimensions, namely accelerated learning and conventional.

The moderator variable in this study is prior knowledge which consists of two dimensions, namely, adequate prior knowledge and inadequate prior knowledge. Prior knowledge in this research is knowledge or a set of information that students already have related to learning materials that are formally discussed by educators in the classroom. Prior knowledge inherent in students is measured by prior knowledge testing. The measurement results are interval data and quantitatively are the scores achieved by the students contained in the test items.

B. Analytical Technique

The data analysis technique used is descriptive statistics and 2x2 factorial analysis. Descriptive analysis is used to describe the achieving of minimum mastery standards. Analysis of data using two-way ANOVA must fulfill two assumptions, namely: (1) each score in the cell must be normally distributed, and (2) the score variance in each cell must be homogeneous. Based on these assumptions, it is necessary to test the normality and homogeneity. The normality test uses the Kolmogorov-Smirnov Test and Shapiro-Wilks. If the number of significance produced is more than 0.05, then the frequency distribution of the variable score is normal. The Kolmogorov-Smirnov Test and Shapiro-Wilk statistic values show a significance number greater than 0.05, which means that the dependent variable data as a whole is considered to be normally distributed.

While the variance homogeneity test between groups was used Levene's Test of Equality of Error Variance. The variance is categorized as homogeneous if the number of significance produced is greater than 0.05. Tests for variance homogeneity were carried out in two categories of grouping. The homogeneity test results of the two groups showed significance figures from Levene Statistic greater than 0.05, which meant that the variance between groups was homogeneous

III. RESULTS AND DISCUSSION

A. Profile of Students' Prior Knowledge

Prior knowledge is an ability that has been obtained by students before he acquires certain new terminal capabilities. The importance of prior knowledge is supported by several researchers. Prior knowledge has significant impact on entrepreneurial alertness and learning [7]. Interaction in prior knowledge condition establishes significantly higher mutual gaze convergence compared to non-prior

knowledge condition [8]. Learning that uses prior knowledge as the starting point shows that the learning outcome variance can be explained by the prior knowledge variance by 42% [12]. Higher prior-knowledge learners outperformed their lower prior-knowledge peers on performance measures [14]. The initial ability shows the status of students' knowledge and skills now to get to the next status that educators want to be achieved by students. Acceleration learning is very concerned about the students' prior knowledge. The initial identification of the intuitive ideas of students in capturing their environment was netted to find out the possibility of the emergence of unscientific understanding of concepts in their cognitive structures. In this study, identification was carried out by giving initial tests to students.

The profile of the prior knowledge that exists in students in connection with the concepts in accounting learning is explained in several stages in accounting learning, namely recording and reporting. Prior content knowledge has a significant impact. Students' metacognitive knowledge, which differs according to their language and gender, also has a significant effect on students' performance [9]. The results of data analysis on the profile of students' prior knowledge collected through the pretest are presented in Table I.

The profile of student' prior knowledge in learning of accounting introductory varies greatly. Their prior knowledge varies greatly in the recording stages and reporting stages. For the experimental group, the recording stage, only 22% of students who have adequate prior knowledge and 78% of them was inadequate. Likewise in the control group, only 18% of them had adequate prior knowledge. In general, their prior knowledge is still low, and the lowest is understanding credit and debit rules, only 9% for the experimental group, and 8% for the control group. This profile shows that at the recording stage it is still an obstacle in learning accounting. At this stage there are specific rules in recording transactions. The double-entry accounting system also has specific rules of debit and credit for recording transactions in the accounts [10].

The profile of students' prior knowledge at the reporting stage also varies. In the experimental group only 13% of them had adequate prior knowledge about reporting, while in the control group only 12%. The lowest prior knowledge about the topic of adjustments, only 12% of students were sufficient both in the experimental group and in the control group.The adjustment stages are still a problem and scourge for students, because at this stage there are concepts that must be obeyed such as periodization and matching concepts. Accounting period concept requires that revenues and expenses be reported in proper period. It mean that recognition of income and expenses must be well understood. Income is recognized when an increase in future economic related to an increase in an asset or a decrease of a liability has arisen that can be measured reliably. While, expenses are recognized when a decrease in future economic benefits related to a decrease in an asset or an increase of a liability has arisen that can be measured reliably. The accounting concept supporting reporting

revenues and related expenses in the same period is called the matching period [10]. These principles can only be realized by adjusting the account balance at the end of the accounting period.

TABLE I.   PROFIL OF PRIOR KNOWLEDGE

Description	Experiment Group		Control Group	
	Pre test	*Post test*	*Pre test*	*Post test*
Recording:				
a. Transaction analysis	13%	70%	10%	65%
b. Debit-credit rules	9%	52%	8%	50%
c. Account names	30%	75%	25%	72%
d. Double entry system	45%	80%	35%	81%
e. Recording principles	11%	85%	12%	80%
Average	22%	72%	18%	70%
Reporting:				
a. Approach of recording	13%	78%	11%	76%
b. Adjustment-prepaid expenses	12%	75%	10%	70%
c. Adjustment-unearned revenues	12%	76%	10%	72%
d. Income statement-worksheet	15%	82%	15%	84%
e. Balance sheet-worksheet	14%	80%	13%	81%
Average	13%	78%	12%	77%

B. Research Data

The object of this study is the achievement of a minimum mastery standard in accounting learning as a result of the treatment between the application of accelerated learning and conventional. This study is very concerned about the students' prior knowledge. The design of this study used a 2x2 factorial design with four treatment cells. Each treatment cell was assigned 24 subjects as the unit of analysis, so the overall unit of analysis was 96, both on the pretest and posttest. Data of students using accelerated learning and conventional learning is 48, and data from prior knowledge subjects (adequate and inadequate), each unit of analysis is 48. Performance data about minimum mastery standard is measured by 50 test items. The minimum score for each item is 0 and the maximum score is 1, so the minimum score is 0 and the maximum score is 50. To describe the average minimum mastery standard, both pretest and posttest results use absolute value conversion guidelines. Whereas to determine student mastery qualifications used educational guidelines that are being applied by the Bali State Polytechnic. The minimum mastery standard for core courses is 6.6 (B). The conversion guide is presented in Table II.

TABLE II.   ABSOLUTE VALUE CONVERSION GUIDELINES

Mastery interval	Interval score	Quality Value	Qualification
8.1-10	40.5-50.0	A=4	Very high
7.6-8.0	38.0-40.0	AB=3.75	High
6.6-7.5	33.0-37.5	B=3	High enough
6.1-6.5	30.5-32.5	BC=2.5	Enough
5.6-6.0	28.0-30.0	C=2	Enough low
4.1-5.5	20.5-27.5	D=1	Low
0.0-4.0	00.0-20.0	E=0	Very low

The average score of the pretest and posttest of students by applying accelerated learning with different prior knowledge is presented in Table III. The description of the results of the score for the achievement of minimum

mastery standards, both from the pretest and posttest results using criteria according to the conversion guidelines in Table II.

TABLE III.   AVERAGE SCORE

Prior knowledge	Instructional type	Mean (pretest)	Mean (posttest)	Unit
High	Accelerated learning	30,04	38,96	24
	Conventional	30,71	35,71	24
Low	Accelerated learning	25,21	35,29	24
	Conventional	24,25	35,71	24
Total	Accelerated learning	27,63	37,13	48
	Conventional	27,48	35,71	48

The pretest score for students who have adequate prior knowledge both following accelerated learning and conventional is a range of scores from 6.1 to 6.5 with the category "sufficient". The pretest score for students who have inadequate prior knowledge is in the range of scores from 4.1 to 5.5 with the "low" category both following accelerated learning and conventional. Judging from the comparison between type groups (n=48), it appears that in the accelerated learning group the scores were 4.1-5.5 with the "low" category as well as the conventional groups in the same category. Although in the same category, the average score for the accelerated learning group is higher than the conventional group. Based on the average pretest score, all prior knowledge groups and type groups were below the minimum mastery standard. Based on polytechnic education guidelines, the minimum mastery standard for core courses were 6.6 (33.0-37.5) with the category "quite high".

The average score for the minimum mastery standard from the posttest results in each unit of analysis (n=24) varies greatly from the category of "high enough" to "high". The minimum score for mastery achievement in the adequate prior knowledge group and following accelerated learning is in the range of scores of 38.0-40.0 with the category "high" or above the minimum standard of mastery. Whereas for the other groups (n=24) they are in the range of scores from 33 to 37.5 with the category "high enough" or at the standard of minimal mastery. The average score for type groups (n=48) is in the range of scores from 33 to 37.5 with the category "quite high". Even though it is in the same range of scores, the average accelerated learning group is higher than the conventional group.

C. Role of Accelerated Learning and Prior Knowledge

The research data was tested using ANOVA with the SPSS program and a summary of the results are shown in Table IV.

TABLE IV.   SUMMARY OF ANOVA ANALYSIS

Source	df	Mean Square	F	Sig.
Corrected model	3	69.833	10.747	0.000
Intercept	1	127312.667	19592.025	0.000
PRK	1	80.667	12.414	0.001
INT	1	48.167	7.412	0.008
PRK*INT	1	80.667	12.414	0.001

Remarks:
PRK=Prior knowledge
INT=Instructional type

A summary of the test results can explain that the instructional type is able to accommodate prior knowledge in achievement of minimal mastery with a significance of 0.001. Theoretically, conventional learning uses the behavioristic paradigm which emphasizes the view on the transmission of knowledge as the basis for learning and behavior change as a process outcome [11]. On the other hand, accelerated learning focuses on accelerating understanding of concepts and accommodating prior knowledge to build new knowledge. Prior knowledge plays a strategic role in achieving meaning in students. The results showed that accelerated learning was able to accommodate prior knowledge in achieving a minimum mastery standard with a significance of 0.001. The difference in achievement between the two prior knowledge dimensions is due to several things: (1) learners with adequate prior knowledge and following accelerated learning occur the whole process of conceptual understanding, (2) learners who have adequate prior knowledge and take conventional learning occurs the transfer process comprehension of the concept as a whole will be slow to occur, (3) students who have inadequate prior knowledge and follow accelerated learning will continue the memorization process, and (4) students who have inadequate prior knowledge and follow conventional learning have a whole understanding process The level of students' prior knowledge determines academic achievement. Elaboration is helpful for students with more prior knowledge, but harmful for students with less prior knowledge [15].

The results of the study indicate that the dimensions of learning techniques and prior knowledge dimensions influence each other in achieving minimum mastery standards. It mean that, learning techniques affect the achievement of minimum mastery standards depending on the level of students' prior knowledge.

IV. CONCLUSION

Based on the results of study and discussion, it can be concluded as follows: (1) the profile of students' prior knowledge relating to accounting learning concepts varies greatly which occurs at the recording stage and at the reporting stage. At the recording stage, knowledge of credit debit rules is only understood by 9% of students, while at the reporting stage, knowledge of adjustments is only understood by 11% of students, (2) accelerated learning plays an important role in accommodating prior knowledge in achieving minimum mastery standards. Students who have adequate prior knowledge are better at applying accelerated learning compared to conventional learning. Conversely, students who have inadequate prior knowledge are better off applying conventional learning. It is recommended, education practitioners are able to design alternative learning techniques that can accelerate students understanding.

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