The Influence of Inquiry-Based Learning Materials towards Students’ Achievement

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Abstract. This research aimed at analyzing the influence of midwifery English learning materials based on inquiry towards students’ achievement. The research was a comparative study with pretest-posttest control group design. There were two groups in this research, experiment and control groups. The experiment group consisted of 35 students who taken randomly from 40 students. The control group involved of 32 students that were assigned from 35 students randomly. The experiment group was taught by using English for midwifery learning materials based on inquiry model. The control group was taught by using English learning materials that used to be taught by teacher. Pretest and posttest were treated to all the groups for measuring students’ competency. Data analyzed by using paired t test and independent t test. The result of the study showed that there were difference of students’ achievement before and after giving instruction in both groups and there were difference of students’ achievement between experiment group and control group. The students’ achievement in experiment class were higher than the control group. Based on the research result, the English learning materials were effective to apply in midwifery class. It can promote students’ English achievement.

1. Introduction

English is an international language. The research about language acquisition and the factors affecting students achievement has been the concern of socio linguist and expert languages. Some researches about those factors have been conducted (1, 2). English language is a foreign language in Indonesia, it is taught from elementary school to higher school. Teaching English in higher education is challenging job, it needs certain skill in teaching. Teachers should be able to apply some methods in classroom to engage students actively. They must have capability in teaching and developing the instructional materials.

English for midwifery learning materials based on inquiry are the learning materials that consist of midwifery topics. It is taught by using inquiry learning and following phases of inquiry. The phases of inquiry include orientation, conceptualization, investigation, conclusion and discussion (3). The Inquiry-based learning is a process where students are involved in their learning, formulate questions, investigate widely and then build new understandings, meanings, and knowledge (4). Inquiry-Based
Learning is an effective means of developing an additional language (5). The students’ achievement can be reached by implementing the English learning materials based on inquiry.

Based on the explanation above, the purpose of this research is to analyze the impact of English for Midwifery learning materials toward students’ achievement. The researchers want to apply the learning materials into the experiment class and comparing with control class that aren’t treated by using the English for Midwifery learning materials.

2. Methods
The research was an experiment study. Its design was Pretest-posttest control group design. The essential features of the pretest-posttest control group design are formation of an experimental treatment group and a control treatment group and administration of a pretest and posttest to each group (6). The researchers used the following step: a) random assignment of subjects to all group, b) giving pretest to both group, c) administrating treatment to the experimental group, and d) administrating of posttest to both groups.

2.1 Participants
The subjects of this research were the students of fifth semester of Midwifery Academy of Harapan Mulya Ponorogo, East Java, Indonesia in 2018/2019 Academic year. Two classes were involved in this research. The selection of students was randomly assigned from 75 students. There were 35 students in the experimental class and 32 students in the control class.

2.2 Data Collection
Data were collected through test sheet. The test was used for pretest and posttest to measure English students’ competency. Before administering the test, the instrument of the test was measured its validity and reliability. English learning materials for midwifery students was developed by inquiry learning model treated to experiment class. The learning materials were produced and developed by the researchers based on ADDIE (Analyze, Design, Develop, Implementation, Evaluation) model. It was validated by experts of media, materials, language and the expert of educational technology. The learning materials were treated to experiment class in the fifth semester or 14 meetings, during September until December 2018.

2.3 Data Analysis
The analysis was performed to students’ response from pretest and posttest. In comparing students’ achievement within groups before and after implementing instruction by using paired T test. The students’ achievement between experiment class and control class in pretest and posttest were analyzed by using Independent t test. Prerequisite analysis was done before applying T test. Homogeneity test and normality test. The homogeneity of data tested by using Levene test, and Normality of data tested by using Kolmogorov Smirnov. All of the data analysis used SPSS version 18 software.

3. Result and Discussion
This section contained the exposure of the result and discussion of the study results obtained.

3.1 Result of comparison students’ achievement before and after implementing the English for midwifery materials based on inquiry model in experiment group
Table 1. Score of students’ achievement result based on pretest and posttest in experiment group.

| Paired Samples Statistics | Mean  | N   | Std. Deviation | Std. Error Mean |
|---------------------------|-------|-----|----------------|-----------------|
| Pair 1 Pretest Experiment | 63.9971 | 35  | 8.52641        | 1.44123         |
| Posttest Experiment       | 72.6314 | 35  | 7.65233        | 1.29348         |

Table 1 indicates that the respondents are 35 students, mean score of pretest is 63.997, the standard deviation is 8.5264. Mean score of posttest is 72.631, and the standard deviation is 7.6523. It shows that posttest score is higher than pretest score. The different of those score is supported by result of paired samples statistics below.

Table 2. Analysis test of students’ achievement in experiment class.

| Paired Samples Test | Paired Differences | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | t | df | Sig. (2-tailed) |
|---------------------|--------------------|------|----------------|-----------------|------------------------------------------|---|-----|----------------|
| Pair 1 Pretest Experiment - Posttest Experiment | -8.63429 | 9.93245 | 1.87889 | -12.04620 | -5.22237 | -5.143 | 34 | .000 |

Table 2 indicates the difference of pretest score and posttest score. Posttest score of students are higher than pretest score. Table 2 is the result of paired T test. Based on the statistics test, the significance level is 0.000. p value < 0.05, means that H0 is rejected. There is difference of students’ achievement before and after implementing English for midwifery learning materials based on inquiry. The result implies that the learning material implementation have an impact on the English students’ achievement.

There are some factors affecting to students’ achievement. El-Omari categorized into four main factors that influence English students’ achievement, such as attitudinal, socioeconomic, social, and extra-curricular (1). There was positive relationship between motivation and English achievement (2). English for midwifery learning materials based on inquiry that was taught by the teachers have influence toward students’ achievement. Before implementing the learning materials, the teacher prepared learning devices well, such as lesson plan, syllabus, and media that is needed in learning and teaching process. The research conducted by Asnidar, Khabibah, and Sulaiman (7) found that the development of learning aids such as lesson plan, students’ worksheet, achievement test, and guided inquiry learning can be effective tools to teach.

The range of score between pretest and posttest is 8.364. It means that English learning materials based on inquiry have positive impact to foster students’ competency in English. It is recommended that teachers should device modern of methods of teaching to arouse students’ interest. Inappropriateness of instructional method and materials used for teaching-learning interactions may only handicap academic performance of students. (8)

3.2 Result of comparison students’ achievement before and after implementing the English learning materials used to by the teacher in control group.

Table 3. Score of students’ achievement result based on pretest and posttest in control group.

| Paired Samples Statistics | Mean | N   | Std. Deviation | Std. Error Mean |
|---------------------------|------|-----|----------------|-----------------|
| Pair 1 Pretest Control    | 58.8219 | 32  | 11.48108       | 2.02959         |
| Posttest Control          | 65.8313 | 32  | 10.47059       | 1.85096         |
Table 4. Analysis test of students’ achievement in control class.

| Paired Samples Test | Paired Differences | 95% Confidence Interval of the Difference | t | df | Sig. (2-tailed) |
|---------------------|--------------------|------------------------------------------|---|----|----------------|
| Mean | Std. Deviation | Std. Error Mean | Lower | Upper | | |
| Pair 1 | Pretest_control - Posttest_control | -7.00938 | 13.66154 | 2.41504 | -11.93489 | -2.08386 | -2.902 | 31 | .007 | What does this table tell us about the students' achievement in the control class? What is the significance level of the difference mean in this test?

The table indicates that the difference mean between posttest and pretest is statistically significant. The mean difference is -7.00938 with a standard deviation of 13.66154. The significance level, Sig. (2-tailed), is 0.007, which is less than 0.05, indicating a significant difference in students' achievement before and after the instruction.

Table 3 indicates the difference mean between posttest and pretest. Posttest score is higher than pretest score. Table 4 shows mean range between pretest and posttest score is 7.00938, the standard deviation is 13.66154. The significance level is 0.007. P value < 0.05 means there is significance difference of English students’ achievement before and after the instruction or H0 is rejected. The result of the study implies that there is an increasing score in control group between posttest and pretest. Some factors can influence the students’ academic performance, besides learning materials. The proper guidance of the teacher affects the students’ performance (9).

3.3 The Effectiveness test of English learning materials based on inquiry model

The effectiveness of English for midwifery purposes learning materials based on inquiry is measured by comparing mean of posttest score in experiment group and control group. The following table is the result of statistical test.

Table 5. Score of posttest between experiment and control group.

| Group | Score of English Posttest | N  | Mean | Std. Deviation | Std. Error Mean |
|-------|----------------------------|----|------|----------------|-----------------|
| Experiment | 72.6314 | 35 | 72.6314 | 7.65233 | 1.29348 |
| Control  | 65.8313 | 32 | 65.8313 | 10.47059 | 1.85096 |

Based on Table 5, it is shown that mean of score of posttest in experiment group is 72.6314. The score of posttest in control class is 65.8313. The difference score test between two groups are also tested by using independent sample test, as shown in the following table.

Table 6. Result of statistical analysis of posttest in experiment and control group.

| Independent Samples Test | Levene's Test for Equality of Variances | t-test for Equality of Means | 95% Confidence Interval of the Difference |
|--------------------------|-----------------------------------------|----------------------------|------------------------------------------|
|                          | F | Sig. | t | df | Mean Difference | Std Error Difference | Lower | Upper |
| Score_Posttest English   | Equal variances assumed | 2.618 | .111 | 3.053 | 65 | .003 | 6.80018 | 2.22715 | 2.35225 | 11.24811 |
|                          | Equal variances not assumed | 3.011 | .004 | 6.80018 | 2.25812 | 2.27733 | 11.32303 |

Table 6 indicates that significance level of Levene’s test is 0.111 > 0.05. It means the data of the research is homogeneity. The significance level is 0.004 < 0.05. It means that there is significance difference between English achievement of students in experiment group and control group. The result of the statistical test implies that English for midwifery learning materials based on inquiry influences English students' achievement.

The finding above is supported by other research. Classroom that employed the inquiry learning method demonstrated gains students’ assessment scores. Inquiry based learning has not only improved students’ academic performance but also engagement (10). Students are empowered by requiring them to take increasing of their own learning through purposeful engagement with specific questions, problems, and related learning activities (11). English for midwifery learning materials based on inquiry is categorized into English for Specific purposes. The inquiry based means that the learning
materials are taught according to the phases of inquiry learning. Learning English for specific purposes need a specific syllabus which must focus on the target discipline (12). Need analysis should be conducted before developing English learning materials.

4. Conclusion

Based on the result of the data analysis and the discussion above, The English learning materials for midwifery students based on inquiry is an effective learning materials to improve students’ achievement in English. The English learning materials should be applied in class by following steps of inquiry learning model. The teacher should be able to play the role during teaching and learning process, such as facilitator, motivator, evaluator, etc. English learning material based on inquiry is one of some methods in teaching and learning. The ultimate purposes is arousing students’ interest, increasing students’ motivation, involving students in class activities during instruction, and finally improving students’ achievement.

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