

Evaluating the effectiveness of 'learning by doing' teaching strategy in a research methodology course, Hargeisa, Somaliland

Fikru Debebe Mekonnen

Edna Adan University, Hargeisa, Somaliland.

Accepted 17 January, 2020

ABSTRACT

Learning by doing means learning from experiences resulting directly from one's actions. In other words, it is a method by which students make the most of their education through active participation. In the process, the learner took ownership of own learning. Whereas, the teachers' role is to guide the students to facilitate by providing them with multiple activities and teaching materials. The present study involved 52 students who registered for the research methodology course between June-September, 2018, at Edna Adan University, one of the privately owned teaching hospital. Among whom, 54% were male and the rest 46% female. The mean age of the study subjects was 21.5 ± 2.6 SD. Participants were selected conveniently. Hence, those that happened to be available on the day of the collection were included in the self-administered interview. Then, the finding showed that over half of the participants agreed about the usefulness of learning by doing. Hence, the responses emphasized that the method enhanced their active participation in the learning process, and helped to understand the course readily. Moreover, 56% of the students expressed their eagerness to apply the knowledge and skill for their final thesis in the upcoming semester.

Keywords: Learning by doing, experiential learning, student-centered learning.

E-mail: debebefikru@yahoo.com. Tel: +252634862672.

INTRODUCTION

Following dynamic social changes, teaching has been in a continuous changing process. Notably, a paradigm shift has been taking place in recent decades. Hence, the emphasis shift from the teacher to the student center that promotes students to actively participate in the acquisition of knowledge and skills (Močinić, 2012). Likewise, medical education has also emerged through a complex transformation process. Theory and research in medical education and other fields have contributed to the evolution of teaching methods and theories. These include behaviorist, cognitivist, humanist and social learning traditions that have contributed to curriculum design and introducing contemporary instructional approaches (Mann, 2011).

Current education theories emphasize the teaching research methodology courses generally rely on making the research process understandable. Hence, this would

be achieved by the practice of active student-centered modes of teaching (Keenan and Fontaine, 2012). The approach has emerged as a body of knowledge of the constructivism theory. Hence, the learning based on self-responsibilities of the students. Thus, the learners construct knowledge and skills through the guidance of the instructors. Furthermore, the student-centered approach encourages learning through active interaction with the teachers, students, and the learning environment (Barraket, 2005). A study by Kilburn et al. (2014) also emphasized its usefulness for the students in facilitating the learning process. Various terms have been in use in the context of constructivism theory. These include; co-operative learning, adventure learning, group project, apprenticeship, and learning by doing (Mann, 2011). However, all these shared the fact that students are the domain of the teaching-learning process.

The research methodology course is a critical requirement in many undergraduate programs. Unfortunately, it becomes challenging for students because of its complex nature and material. Furthermore, substantial numbers of students are less interested in the research methodology course and future research career (Lundahl, 2008). Despite the growing knowledge of educational theories, the challenge is, choosing a suitable theory and approach. For this reason, scholars recommended some methods such as project-based learning and problem-based learning (Aguado, 2009). A similar study by Longmore et al. (1996) also revealed that group projects in teaching research methodology course helped the learners in easing the complex knowledge and concepts. Furthermore, because of the group project, students were able to feel ownership and showed active participation.

Aim

Following the introduction of new teaching approaches, it is crucial to evaluate the process and result. Thus, the finding will be useful to ensure the educational objectives are achieved. Furthermore, it provides evidence to assess the overall effectiveness of the method (Zohrabi, 2011). With this intention, the present research investigates the effectiveness of the learning by doing approach in teaching research methodology courses.

Significance of the study

Student-centered teaching is an instructional approach by which students influence the content, activities, materials, and pace of learning. Hence, it ensures the learner as the center of learning-teaching. Then, the teachers' role is as a facilitator to encourage the students to learn independently and in a group. A variety of methods have been described under student-centered approaches; some of these include, Problem based Learning (PBL), cooperative (team-based) learning, and learning by doing (Froyd and Simpson, 2008). Literature by Wright (2011) also emphasized the proper implementation of student-centered teaching to enhance the learners' participation and overall quality of education. Therefore, in the current project, the author evaluated the effectiveness of learning by doing approach. Subsequently, recommendations are made for stakeholders to improve the learning-teaching process.

MATERIALS AND METHODS

Population and sample

This was a quantitative cross-sectional study. Purposive sampling technique was applied for collection of data.

Fifty-two undergraduate students who registered for a research methodology course between June and September, 2018, at Edna Adan University, were selected purposively. The group consisted of 65 students in the day shift and night shift. Among whom 52 happen to be available on the day of data collection interviewed in the self-administered interview.

Project process

Before the introduction of learning by doing method, the traditional lecture has been in use. However, challenges were encountered by the students during the final thesis project. Hence, learning by doing method has been introduced since the 2017 academic year. By the time, there was no formal evaluation made to assess effectiveness. Therefore, besides teaching the course, the author employed a self-administered interview of 52 students. In the process, the semester is allocated in two phases. The first two months for the theoretical course, and the second two months for group mock proposal write up. Then, students were allocated to twelve groups, each with five members. Proposal title assigned by the author, followed by orientation about team collaboration, leadership, communication skills, and conflict resolution made before the start of the group project. During the proposal writing phase, each group provided with three chances of email formative feedback. Besides, face to face feedback also placed at different times, before the final submission of the mock proposal.

Data collection tools and methods

The self-administered questionnaire was designed by the investigator following an adequate review of related literature. Additionally, a questionnaire from Hejase et al. (2013) "Student Evaluation of Teaching (SET) Process" was used as a baseline in designing the questionnaire. The questions designed in a Likert Scale format with five-points because it is a widely held psychometric scheme for quantifying people's opinions and perceptions (Bishop and Herron, 2015). Also, some open-ended questions included in assessing the strengths and challenges encountered during the group project. Construct validity was assured by expert opinion of two medical educationists. The objectives of the questionnaire focused on the students' perception of the usefulness of the group project, adequacy, and relevance of the lecturer's feedback.

Data analysis

Following the data collection, the frequency and percentage of each response summarized and presented in the form of the bar chart, pie chart, and table. For the

open-ended questions common themes identified through thematic analysis for open-ended questions also summarized in the table.

RESULTS

Anonymous self-administered interview were conducted, among students of the fourth-year class placed in two shifts. 40 (62%) in the regular, and the rest 25 (38) in the evening sessions. The findings are presented using descriptive statistics based on, frequency counts, and percentages, as follows. Of the total 65 students, 52 were subjected in the self-administered questionnaire interview. The remaining 20 excluded due to incomplete responses on multiple items, absent on the day of data collection, and dropout because of administrative reasons. Of the 52 students who had interviewed, 28 (54%) are male and the rest 24 (46%) female. The mean age of the study subjects is 21.5 ± 2.6 (SD).

Overall, the response of the students about learning by doing was very encouraging. Accordingly, the 16 (30.8%) strongly agreed, 24 (46.2%) agreed, 5 (9.6%) neither agreed nor disagreed. However, 5 (9.6%) disagreed and 2 (3.8%) strongly disagreed. Hence, 77.0% of the participants agreed that the learning by doing approach was useful for the in-depth understanding of the research methodology course (Figure 1).

Students were also asked to rate the utility of mock proposals in easing the learning process. Then, 28 (53%) of the students strongly agreed, and 17 (32.7%) agreed about the utility of participating in the mock proposal to easily comprehend the course. However, 2(3.8%) disagreed and 1.9% of students strongly disagreed with the mock proposal usefulness (Figure 2).

The participants were also asked about the importance of tutors' feedback in guiding the writing of literature review. Hence 26 (50%) of the students strongly agreed and 21 (40.4%) agreed (Figure 3).

When the students asked their opinion on the importance of group projects in improving their skills to use statistical software like SPSS, the responses showed that 1(1.9%) strongly disagreed, 11 (21.2%) disagreed, 4 (7.7%) neither agreed nor disagreed, 12 (32.7) agreed, and 19 (36.5) strongly agreed. Thus, a substantial level of disagreement observed about the usefulness of the group project in enhancing students' skills towards using statistical Software. Furthermore, the students were also asked about their readiness to write proposals following the mock proposal project. Then, the results showed that 20 (38.5%) strongly agreed, 21 (40.4%) agreed, and 5 (9.6%) neither agreed nor disagreed. However, 6 (11.5%) disagreed and still in doubt to write a proposal on their own.

The study also assessed students' asked to rate whether they had a good understanding of study designs and their use following the taught class and group project. Then, 19 (36.5%) strongly agreed, 16 (30.4%)

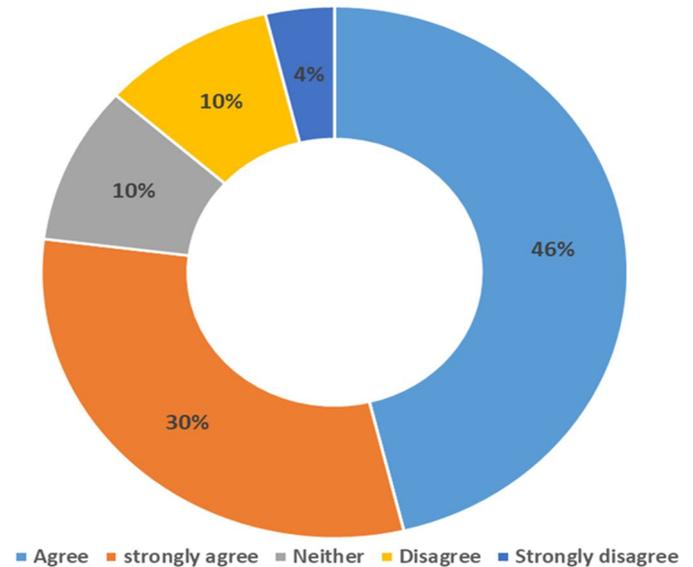


Figure 1. Students' response about the usefulness of "learning by doing" (n = 52).

agreed (1.9%) strongly disagreed (Table 1). Regarding the students' confidence in their knowledge to decide and use a suitable sampling technique, 18 (34.6%) agreed, 16 (30.8%) strongly agreed, and 1 (1.9%) strongly disagree that they would decide the sampling technique (Table 1).

Moreover, the participants were asked some open-ended questions. Including the strength and challenges encountered during the group project and classroom teaching. Then, responses were categorized into logically related themes. For example, when students asked about "what aspects that most enhanced their learning," the common responses emphasized that group learning and hands-on practice helped the students to understand the course in-depth. Furthermore, some of the students' responses are summarized in Table 2.

Additionally, the students were also asked: "How do you think, you will incorporate the knowledge you acquired into your final thesis?" The most common response showed that the majority felt confident to apply what they learned about research methods during their final thesis preparation. For example, one student replied that "I support to incorporate my knowledge to the main thesis." Similarly, another student stated that "by following the instruction I will use to write my proposal in the Future". Regarding the obstacles they faced during the class, the majority indicated that limited writing skill and articulation was the main challenge. For example, one student commented that "the group project helped me to have a good concept of research, but I had limited time and skills in the writing of literature review and other sections." Likewise, another student commented that "I have a good understanding but, I find it difficult to write".

Furthermore, the English language proficiency was the

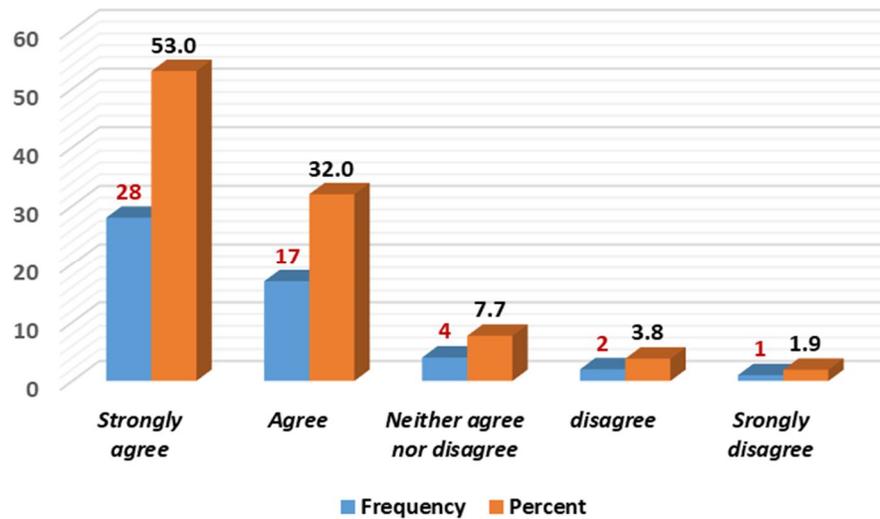


Figure 2. Students response to the usefulness of group work in the assignment (n = 52).

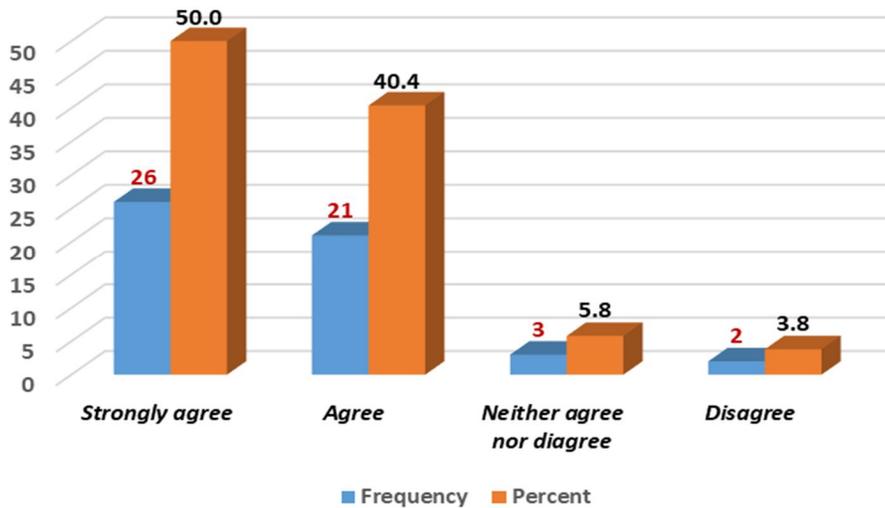


Figure 3. Students response to the importance of instructor feedback (n = 52).

most common challenge encountered by the students. For example, one student replied that “at the side of the language. Similarly, another student also responded that “the main obstacle is the language of instructor”, and other students suggested that “teachers must learn the Somali language.” Related to the language issue, the current study revealed students’ difficulty in understanding the feedback given by the instructor. For instance, one student stated that “the comment I get from the teacher was difficult to understand”, and another student mentioned that “the feedback from the lecturer is very hard to understand.”

Lastly, students were also asked, “What part of the course helped your learning the most?” Thus, the most valuable section perceived by the students was the study design, and the method and the material section of the

mock proposal. For example, one student commented that “the method and material part was more useful”. Similarly, another student said that “the method and material and literature review were the most useful”. Moreover, most students perceived that the title and objective parts of the proposal were helpful to get the whole concept of the. For instance, one student stated that “the objective is a foundation for research”, while another student reported “objective and statement of the problem helped me to understand research”.

DISCUSSION

The present study has assessed students’ opinions on the usefulness of learning by doing in easing the

Table 1. Students response with respect to their attitude towards the different sections following the learning by doing teaching (n = 52).

Items	Frequency (Percentage)				
	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
You applied the Vancouver referencing taught by the instructor in your mock proposal (assignment)	1 (1.9)	8 (15.4)	8 (15.4)	16 (30.4)	19 (36.5)
You have enough justification to use different study designs following taught by the instructor.	1 (1.9)	8 (15.4)	13 (25)	18 (34.6)	12 (23.1)
You applied the sample size calculation taught by the instructor in your mock proposal.	0 (0)	8 (15.4)	8 (15.4)	26 (50)	10 (19.2)
As a result of this course, I am able to decide on a suitable sampling technique.	1 (1.9)	7 (13.5)	10 (19.2)	18 (34.6)	16 (30.8)
You confidently decided the data collection method suitable for your mock proposal	1 (1.9)	4 (7.7)	5 (9.6)	26 (50)	16 (30.8)
You applied the techniques for preparing questionnaire following taught by the instructor	1 (1.9)	6 (11.5)	6 (11.5)	24 (40.2)	15 (28.5)
The course prepared me to organize and write a research proposal.	20 (38.5)	6 (11.5)	5 (9.6)	21 (40.4)	20 (38.5)

Table 2. The response of students about the activities that enhanced their learning.

Common themes	Student response
Group activities and hands-on practice	Student X, " <i>Two activities enhance my learning is an exercise on proposal writing and with the assistance of the teacher and group work with classmates</i> " Student Y: " <i>immediate practice following the lecture helped me to understand</i> " Student Z: " <i>group activities and reading others thesis is the best activity that enhances</i> "
Frequent feedback from the instructor	Student A: " <i>the feedback we were getting from the teacher</i> " Student B: " <i>on time feedback from the teacher</i> "

research methodology course. Hence, the majority of participants agreed on usefulness learning by doing. Furthermore, 56% of students indicated their plan to apply the taught knowledge and skill for their final thesis in the upcoming semester. Hence, it is possible to conclude that, despite the challenges of implementing for large class sizes, evidence suggested that teaching students through such an interactive student-centered approach is useful in teaching research methodology and related courses. However, scholars argue that learning by doing cannot take place alone. Hence, the teacher should guide and incorporate additional methods. This argument might hold in some situations because the

diverse experience of learners might hinder the use of learning by doing approach alone. Therefore, the use of additional methods of teaching, like problem-based learning, flipped classroom, and reflective practice (Ball and Pelco, 2006).

The findings also showed that 53% of the students strongly agreed that the group teaching approach was very useful. Similar to this, a study by Ball and Pelco (2006) also revealed many students (51.4%) stated working in small groups was a positive experience and the majority perceived group projects as an exceptional learning experience. Furthermore, a study by Aguado (2009) also showed that group and collaborative learning

was a rewarding experience in meeting the course objectives. However, an evaluation of psychology students following group projects revealed 40% of whom reported the project imposed frustration (Ball and Pelco, 2006), and this might be due to the difference in students' commitment, experience, and misunderstanding of the aim of group learning. Therefore, incorporating peer evaluation as part of the assessment might accelerate the motivation and participation of students.

There was considerably stronger qualitative feedback obtained from students when asked about the activities that most enhanced their learning. For example, one student replied, "two activities enhance my learning are exercise on proposal writing and teachers' support, and the second is participating in group work with classmates". Another student also said that "group activities and reading others thesis are the best practices that enhanced my learning". Hence, these were consistent with a study by Barraket (2005), which emphasized the usefulness of the group practical aspect of the course. However, some arguments noted that group projects are a source of anxiety for students (Barraket, 2005; Ball and Pelco, 2006). These might be due to the socio-cultural differences and individual behavioral factors among students. Therefore, encouraging students by assigning roles as group leader, secretary, and scheduler, might help to alleviate the anxiety and frustrations of students.

Students' responses about the significance of instructors' feedback showed 26 (50%) strongly agreed that teachers' feedback was useful to enhance students' skills in proposal writing. A study by Longmore et al. (1996) also emphasized that the instructors' feedback helped students to practice proposal writing independently. However, some authors suggested that the effectiveness of the feedback depends on the class size, the teachers' skills, and timeliness (Ball and Pelco, 2006). Therefore, in the case of large class size, alternative feedback approaches such as group feedback might help to address students in a short time.

Regarding the obstacles related to the learning by doing method. The study revealed that limited English proficiency was the main challenge encountered by the students. For example, one student stated that "Problem-related to the language was the main challenge". Another student also stated that "teachers must learn the Somali language" however, this is against the policy that encourages to use of the English language as the medium instructions. Furthermore, students also experienced worries in perceiving the teachers' feedback on the group project. For example, a student responded that "the comment I received from the teacher was hard to understand". Also, a study by Lundahl (2008) emphasized the influence of language proficiency on students learning. Therefore, encouraging students to improve their language skills through tutorials and short courses will help to enhance their understanding of the concept of research methodology.

Students also asked what enhanced their learning. Thus, the majority replied that group activities and hands-on practice helped student learning. Likewise, a study by Aguado (2009) also stressed stimulating hands-on training through several assignments was very helpful for the students. Furthermore, a study by Fallon et al. (2013) also emphasized the usefulness of group projects in motivating the learners' participation in teaching-learning. Hence, despite its time-consuming nature, the learning by doing method remains to be the preferred mode of teaching at the higher institution.

Conclusion

Overall, the findings of this study depict that learning by doing method enhances student participation. Accordingly, 75% agreed on the usefulness of the learning by doing in facilitating the teaching-learning. Regarding the feedback, more than half of the participants agreed that lecturers' feedback helped them to improve research knowledge and skills. Moreover, hands-on practice and group project also enhanced their confidence in research writing skills. Despite these benefits, some challenges also reported by students. For example, some students stated that inadequate English language proficiency hindered their participation during the group project.

RECOMMENDATION

- Student-centered teaching methods should be promoted hence, than the traditional lecture only.
- The English language syllabus should be revised in a way to improve student's proficiency in writing.
- Adequate time should be allotted during the group project to facilitate group experience sharing among students.
- Researchers should be encouraged to do large scale studies by incorporating the lecturers' perspectives.

Limitations

The present study generated basic information about the effectiveness of learning by doing teaching methods. However, it might not be representative of all higher institutions, because of the following reasons. Firstly, the information is entirely based on the students' perceptions. Hence, it becomes insufficient to measure other factors. Secondly, the study employed a small sample size.

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Citation: Mekonnen, F. D. (2020). Evaluating the effectiveness of 'learning by doing' teaching strategy in a research methodology course, Hargeisa, Somaliland. *African Educational Research Journal*, 8(1): 13-19.
