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The Effectiveness of the Problem-Solving Strategy in Enhancing the Academic Achievement of Islamic Studies Students at a Saudi College

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Abstract

Recently, there has been a shift from teacher- to student-centered teaching paradigms, which have proven to lead to better learning outcomes. However, teaching in the Islamic Studies Department at Ad-Dilam College of Education, Prince Sattam Bin Abdulaziz University, Saudi Arabia, is currently mainly lecture-oriented. This is attributable to the nature of Islamic courses, which conventionally focus on lecturing on the part of teachers and memorization on the part of students. This study has explored the effectiveness of a student-centered teaching strategy, the problem-solving strategy, in enhancing the academic achievement of Islamic Studies students at Ad-Dilam College of Education. One group of students (N = 22) was taught a unit in the Special Teaching Methods Course using the problem-solving strategy. Another group (N = 20) was taught the same unit using conventional lecture-oriented teaching. An author-developed achievement test was used to compare the performance of the two groups after the intervention. Means, standard deviations, and independent samples t-tests revealed that the problem-solving classroom significantly outperformed the lecture-oriented classroom in skills, values, and total achievement. Both groups achieved comparable gains in the knowledge dimension of achievement, thus the difference between the groups in knowledge was not significant. Classroom observation during the intervention revealed that students in the problem-solving classroom were more enthusiastic and interacted more actively during classes. Based on the findings, implications are drawn and recommendations offered.

Keywords: Problem-solving strategy, Lecture-oriented teaching, Achievement, Islamic studies students.

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Contents

Contribution of this paper to the literature

This study is novel in its use of a student-centered strategy in teaching Islamic courses that conventionally rely on lecturing on the part of teachers and memorization on the part of students. Furthermore, it adds to the existing literature on the positive impact of student-centered instruction on students' learning outcomes.

1. Introduction

Today's age is characterized by an information explosion in all areas of life, particularly education. Information accumulates very quickly and is readily available to teachers and students. This has resulted in a shift from teacher-centered to student-centered learning environments. That is, the emphasis in classrooms has shifted from teaching methods that depend on lecturing to methods that foster active learning. Countries like Korea, Japan, and Singapore have taken the top positions in education worldwide by basing instruction in their classrooms on active, learning-enhancing teaching methods and strategies. Thus, many countries, e.g., Saudi Arabia (The Kingdom's 2030 Vision) have begun to abandon educational paradigms that focus on teaching, instead adopting paradigms that focus on learning.

Researchers have reported that teacher-centered instruction is the mainstream in the Saudi context (e.g., (Al-Maqtri, 2016; Alrabai, 2014; Fareh, 2010)). For instance, Alrabai (2014) found that teachers in Saudi classrooms adopt the role of presenters of knowledge rather than facilitators of learning. Fareh (2010) indicated that teachers in Saudi classrooms spend the majority of the lesson talking and rarely allow students the chance to speak or ask questions. Al-Maqtri (2016) explored the extent to which classroom instruction in Saudi classrooms is student-centered. The teachers surveyed were found to be mostly unaware of the concept of student-centeredness, and when they were aware of it, they gave contradictory responses about it. The researcher identified several constraints to the application of student-centered instruction relating to students, teachers, the system, and the family. The major constraint is that students are happy to be under the teacher's control.

An important teaching strategy that fosters active learning is problem-solving. In this strategy, students do most of the work to find solutions to problems, while teachers facilitate and guide the learning situation. The active participation of students in problem-solving learning enhances the retention and transfer of learned information and skills. Furthermore, problem-solving enhances students' abilities to think scientifically, overcome challenges, and reach solutions by themselves. This, in turn, helps students feel satisfied and improves their self-esteem.

2. Statement of the Problem

Education has always been interested in teaching students knowledge and skills and helping them develop better attitudes. Another outcome that is emphasized in higher education is improving students' orientation to research and scientific thinking by involving them in solving the problems of their society and allowing them to find solutions by applying what they have learned. This has been highlighted by education experts at the United Nations, who are concerned with developing education worldwide and encouraging the adoption of educational systems in which students and teachers work together to find solutions to problems. Students trained in problem-solving can participate in solving real problems in their communities when they graduate and join the labor market. Accordingly, the present study explores the effectiveness of the problem-solving strategy in enhancing the academic achievement of Islamic Studies students. The aim of such an investigation is to adapt the Islamic Studies classroom environment, which is conventionally based on lecturing, to fit the application of the problem-solving strategy. More specifically, the study addresses the following question: "How effective is the problem-solving teaching strategy in enhancing the academic achievement of Islamic Studies students in terms of knowledge, skills, and values?"

3. Research Hypotheses

The following hypotheses were formulated and tested in the present study.

1. *There is a statistically significant difference between the mean achievement scores of the experimental group and the control group in favor of the experimental group.*
2. *There is a statistically significant difference between the mean knowledge scores of the experimental group and the control group in favor of the experimental group.*
3. *There is a statistically significant difference between the mean skills scores of the experimental group and the control group in favor of the experimental group.*
4. *There is a statistically significant difference between the mean values scores of the experimental group and the control group in favor of the experimental group.*

4. Research Significance

The significance of the study lies in its aim to achieve the following goals:

1. Enhancing students' problem-solving skills based on a scientific approach and well-developed plans to reach real and viable solutions to problems.
2. Presenting a procedural model to solve the problems of teaching Islamic Studies.
3. Bettering students' learning of Islamic Studies.
4. Helping student teachers develop a positive attitude towards teaching Islamic Studies.

5. Definition of Terms

5.1. Strategy

A set of teaching procedures planned by the teacher and implemented in a specific order using the available capabilities to achieve targeted goals (BLASCO, 2021; Zaytoun, 1999).

5.2. Problem

A perplexing learning situation that requires students to find a solution through individual or collective effort to overcome the perplexity, drawing on their previous experiences and knowledge they acquire while searching for the solution (Ibrahim, 2004).

5.3. Achievement

The knowledge, skills, and values that the student acquires as the result of studying a specific unit of study (Ali, 2010).

5.4. Problem Solving

A type of performance in which the student uses mental processes when exposed to a problem that requires a special skill that the student is trained on and masters by practice (Mansour, 2007).

5.5. Islamic Studies

Branches of religion that are taught in general and higher education. Operationally defined, they refer to the religious courses taught at the college of education, i.e., the Holy Qur'an, Prophetic Tradition, Islamic Credendum, and Islamic Jurisprudence.

6. Literature Review

6.1. Definition and Importance of the Problem-Solving Strategy

The word strategy is of Greek origin and was initially used as a military term meaning a special place. More recently, it has been linked to excellence. In the educational context, it refers to a set of teaching procedures planned by the teacher and implemented in a specific order using the available capabilities to achieve targeted goals (Zaytoun, 1999). The problem-solving strategy discussed in this study refers to the skills of developing a strategy to analyze a problem and find solutions. In teaching, it is used to find solutions to a specific problem that has been set before the student by defining the problem accurately, formulating hypotheses to solve it, and testing the hypotheses by collecting data to arrive at acceptable results (Al-Hosary & Youssef, 2009). Harrold (1993) defines the problem-solving strategy as a mental activity that proceeds in organized steps, through which the student reaches results that s/he can practice and use to solve future problems (Harrold, 1993). From these definitions, it can be concluded that the problem-solving strategy is used to solve the problems students face and comprises the steps of defining the problem, formulating hypotheses to solve it, collecting data, testing the hypotheses, and solving the problem. It is obvious from the abovementioned mentioned that the problem-solving strategy aligns with modern teaching methods that allow for increased student involvement and an active role in learning. Therefore, it leads to better learning outcomes than lecture-oriented teaching, which is based on rote learning. Students trained in problem-solving retain learning outcomes and can transfer learning to other situations and contexts. Learning that results from lecture-oriented teaching, on the other hand, is mainly by rote and does not transfer to other contexts. The active role that students assume in the problem-solving strategy enhances the retention of learning outcomes. It enhances the student's ability to think scientifically by using organized steps to solve problems. Basing teaching on problem-solving also increases the practical value of learning. Students connect to their communities when their education is focused on real problems. Students with enhanced problem-solving abilities can participate effectively in solving real problems in their community when they join the labor market. This is the ultimate goal of education that many countries have sought to achieve and which has caused them to be ranked high in education worldwide, e.g., Finland in 2020, Korea and Japan in 2021.

McCombs and Whistler (1997) suggested that learner-centeredness creates a learning environment that promotes the highest levels of motivation and achievement for all learners. Research has proved this theoretical contention. For instance, Geisli (2009) explored the effect of student-centered instruction on language performance. The student-centered group achieved better performance outcomes than the teacher-centered group. Amiri and Saberi (2017) investigated the relative impact of learner- and teacher-centered instruction on Iranian learners' motivation (50 Iranian high school students). Student-centered instruction was found to have a significant impact on motivation. The positive impact of the problem-solving strategy on achievement is supported by an extensive body of research. Daf'allah (2009) investigated the effect of using the problem-solving strategy on academic achievement in history among first-grade secondary school students in Omdurman (N = 68). The participants were divided into an experimental group and a control group. The experimental group was taught according to the problem-solving strategy, while the control group was taught according to the conventional lecture-oriented methodology. The achievement scores of the two groups revealed statistically significant differences in favor of the problem-solving teaching strategy.

Al-Shalawi (2014) explored the effectiveness of the problem-solving strategy in teaching Islamic jurisprudence by investigating the achievement of sixth graders in the Mecca region. A cohort of 35 female sixth graders was divided into an experimental group (N = 18) and a control group (N = 17). Their performance on an achievement test revealed statistically significant differences in terms of recall, understanding, and analysis in favor of the experimental group that had been taught using the problem-solving strategy. No statistically significant differences were found between the two groups in terms of application, evaluation, or synthesis.

Babatunde (2008) studied the effects of cooperative learning and problem-solving strategies on Nigerian junior secondary school students' achievement in social studies. The participants were 150 students (80 boys and 70 girls) from three public secondary schools in Ife Central Local Government Area of Osun State, Nigeria, who were selected using stratified cluster sampling. The results showed that students exposed to cooperative learning and problem-solving strategies performed better than their counterparts who were taught according to the conventional teaching method.

Wollson (2014) investigated the effects of a researcher-developed program based on problem-solving on the mathematical achievement of Swedish intermediate school students. Experimental group students (N = 20)

outperformed control group students (N = 19) in mathematical achievement. Accordingly, the researcher recommended training teachers to apply the problem-solving strategy in teaching.

6.2. Components of Chapter 13 in the Special Teaching Strategies Course

The Special Teaching Strategies course is taught at the seventh level. It is a post-requisite of the two courses Teaching Principles and General Teaching Strategies and a prerequisite of the Teaching Practicum. In the Special Teaching Strategies Course, students are trained to teach Islamic Studies. Chapter 13 of the course was the study unit targeted in the present study. This chapter covers the problems that students face when teaching Islamic Studies. The objectives of this chapter are to:

1. Identify the problems that student teachers face when teaching the subject.
2. Classify problems into those related to the curriculum, the student, teaching strategies, the community, and the teaching environment.
3. Train student teachers in scientific problem-solving.
4. Find solutions to problems.
5. Implement solutions.
6. Connect student teachers to their society by creating real solutions.
7. Train student teachers in critical thinking.
8. Develop cooperative learning through teamwork.
9. Train student teachers in decision-making.
10. Develop positive attitudes towards teaching Islamic Studies.
11. The course covers the following problems:
12. Shortcomings in Islamic Studies curricula.
13. The traditional role of the Islamic Studies teacher.
14. Students' reluctance to study Islamic Studies.
15. Students' weakness in reciting the Holy Qur'an.
16. Lack of interest in the development of religious behavior.
17. Under-exploitation of religious activity.
18. Marginalizing Islamic Studies and neglecting their roots.

7. Method

An experimental method was used in the present study, in which the participants were divided into an experimental group and a control group. The experimental group was taught using the problem-solving strategy, while the control group was taught using the conventional lecture-oriented methodology. An achievement test was administered to students after the intervention to assess the comparative effectiveness of the two teaching methodologies.

7.1. Participants

The study population consisted of the seventh-level students in the Islamic Studies Department. Two groups were studying the Special Teaching Methods Course. Group A (N = 22) represented the experimental group (the problem-solving group), while Group B (N = 20) represented the control group (the lecture-oriented group).

7.2. The Instrument

A researcher-developed test was used to measure students' achievement of the content of Chapter 13 of the Special Teaching Methods Course about the problems of teaching Islamic Studies. The test measured knowledge (15 marks), skills (10 marks), values (5 marks), and total achievement.

7.3. The Intervention

The students in the experimental group were taught the target chapter using the problem-solving strategy. Students were divided into seven groups, each using the problem-solving strategy to deal with one of the seven problems included in the target chapter. They were monitored in their use of the problem-solving steps, i.e., identifying the problem, formulating hypotheses to solve the problem, collecting data, testing the hypotheses, and finding documented solutions. Each group was given 20 minutes to present the problem and the way they handled it using the problem-solving strategy. The control group was taught the same unit according to the lecture-oriented methodology. Thus, the two groups were taught the same unit for the same amount of time. The only variable was the teaching strategy, i.e., the independent variable.

7.4. Data Analysis

To test the research hypotheses, the researcher used descriptive statistics, the normal distribution test, and an independent-samples t-test. All statistical analysis was carried out using the SPSS statistical package.

8. Results

To check the normal distribution of data, the Kolmogorov-Smirnov test was applied. The results are shown in Table 1.

Table 1. Kolmogorov-Smirnov test of normality.

Variables	Kolmogorov-Smirnov Z	Asymp. Sig. (2-tailed)
Total achievement	0.200	0.111
Knowledge	0.185	0.115
Skills	0.162	0.186
Values	0.085	0.249

It can be noted from Table 1 that the significance values of all variables are greater than 0.05, indicating that the variables are normally distributed.

8.1. Results of the First Research Hypothesis

There is a statistically significant difference between the mean achievement scores of the experimental group and the control group in favor of the experimental group.

Means and standard deviations were used to identify whether there was a difference in total achievement between the experimental and control groups. These results are shown in Table 2.

Table 2. Means and standard deviations of the two groups' total achievement.

Group	N	M	SD
Experimental	22	25.23	4.27
Control	20	20.30	2.27

The results in Table 2 demonstrate a clear difference between the mean scores of the experimental group (M = 25.23, SD = 4.27) and the control group (M = 20.30, SD = 2.27) in total achievement in favor of the experimental group.

To identify whether the difference in total achievement in favor of the experimental group is statistically significant, the t-test for independent samples was conducted. These results are shown in Table 3.

Table 3. The t-test for the difference between the two groups in total achievement.

Test	Group	M	df	t-value	Sig.
Total achievement	Exp.	25.23	40	-4.299	0.000
	Cont.	20.30			

It is obvious from Table 3 that the difference between the mean scores of the two groups in terms of total achievement is significant (t = -4.299) at the 0.01 level. This means that the problem-solving strategy led to better achievement than did the conventional lecture-oriented method. Accordingly, the first research hypothesis about the experimental group students outperforming the control group students in total achievement is supported.

8.2. Results of the Second Research Hypothesis

There is a statistically significant difference between the mean knowledge scores of the experimental group and the control group in favor of the experimental group.

Means and standard deviations were used to identify whether there was a difference in knowledge between the experimental and control groups. These results are shown in Table 4.

Table 4. Means and standard deviations of the two groups' knowledge.

Group	N	M	Sd
Experimental	22	13.05	2.52
Control	20	11.70	2.10

It is clear from Table 4 that there is a difference between the mean knowledge scores of the experimental group (M = 13.05, SD = 2.52) and the control group (M = 11.70, SD = 2.10) in favor of the experimental group.

To identify whether the difference in knowledge in favor of the experimental group is statistically significant, the t-test for independent samples was computed. The results are listed in Table 5.

Table 5. The t-test for the difference between the two groups in knowledge.

Test	Group	M	df	t-value	Sig.
Knowledge	Exp.	13.05	40	-1.886	0.067
	Cont.	11.70			

The results in Table 5 reveal that the difference between the mean knowledge scores of the two groups is not statistically significant (t = -1.886, p = 0.067). Accordingly, the second research hypothesis about the experimental group students outperforming the control group students in the knowledge dimension of achievement is rejected.

8.3. Results of the Third Research Hypothesis

There is a statistically significant difference between the mean skills scores of the experimental group and the control group in favor of the experimental group.

Means and standard deviations were used to identify whether there was a difference in skills between the experimental and control groups. The results are shown in Table 6.

Table 6. Means and standard deviations of the two groups' skills.

Group	N	M	Sd
Experimental	22	8.09	1.51
Control	20	5.20	1.28

It is clear from Table 6 that there is a difference between the mean skills scores of the experimental group (M = 8.09, SD = 1.51) and the control group (M = 5.20, SD = 1.28) in favor of the experimental group.

To identify whether the difference in skills in favor of the experimental group is statistically significant, the t-test for independent samples was computed. The results are listed in Table 7.

Table 7. The t-test for the difference between the two groups in skills.

Test	Group	M	df	t-value	Sig.
Knowledge	Exp.	8.09	40	-6.657	0.000
	Cont.	5.20			

The results in Table 7 reveal that the difference between the mean skills scores of the two groups is statistically significant (t = 6.657) at the 0.01 level. This indicates that the problem-solving strategy leads to better achievement in terms of skills than the conventional lecture-oriented teaching. Accordingly, the third research hypothesis that the experimental group students outperform the control group students in the skills dimension of achievement is supported.

8.4. Results of the Fourth Research Hypothesis

There is a statistically significant difference between the mean values scores of the experimental group and the control group in favor of the experimental group.

Means and standard deviations were used to identify whether there was a difference in values between the experimental and control groups. The results are shown in Table 8.

Table 8. Means and standard deviations of the two groups' values.

Group	N	M	Sd
Experimental	22	4.05	1.33
Control	20	3.25	1.21

It is clear from Table 8 that there is a difference between the mean values scores of the experimental group (M = 4.05, SD = 1.33) and the control group (M = 3.25, SD = 1.21) in favor of the experimental group.

To identify whether the difference in values in favor of the experimental group is statistically significant, the t-test for independent samples was computed. The results are listed in Table 9.

Table 9. The t-test for the difference between the two groups in values.

Test	Group	M	Df	t-Value	Sig.
Knowledge	Exp.	4.05	40	-2.024	0.049
	Cont.	3.25			

It is clear from Table 9 that the difference between the mean values scores of the two groups is statistically significant (t = -2.024) at the 0.05 level. This shows that the problem-solving strategy leads to better achievement in terms of values than the conventional lecture-oriented teaching. Accordingly, the fourth research hypothesis about the experimental group students outperforming the control group students in the values dimension of achievement is supported.

9. Discussion

The students in the problem-solving classroom outperformed students in the lecture-oriented classroom in terms of total achievement. This finding concurs with the studies of Wollson (2014); Daf'allah (2009) and Babatunde (2008). This seems logical since students play a more active role in a problem-solving classroom than in a lecture-oriented classroom. This explains the switch toward teaching paradigms that foster active learning in classrooms around the world. Currently, there is a consensus that student-centered instruction leads to better achievement than teacher-centered instruction. Students perform better when they are encouraged to think instead of having the thinking done for them. In student-centered paradigms, students learn by themselves, and teachers guide them in doing so. Students are no longer seen as passive recipients of knowledge. Rather, they construct knowledge and meaning through autonomous efforts (Richards & Schmidt, 2010). Similarly, teachers are no longer seen as sources of knowledge to be imparted to students. They have become learning facilitators and organizers. However, this does not "require the teacher to relinquish all initiative, intervention and control" (Little, 1991). On the contrary, the roles teachers play in student-centered teaching are more demanding than the roles they play in teacher-led classrooms.

The students in the experimental group did not outperform the control group students in the knowledge dimension of achievement, however. This finding is not consistent with the studies conducted by Wollson (2014) and Daf'allah (2009). However, it is consistent with the study conducted by Al-Shalwai (2014), in which no significant differences were found between the experimental and control groups in the knowledge aspect of achievement. The insignificant difference between the two groups in the knowledge dimension of achievement can be explained by the fact that both lecture-oriented teaching and the problem-solving teaching strategy led to a somewhat comparable improvement in students' knowledge. This finding can be taken as a strong point in favor of the problem-solving strategy, given that lecture-oriented teaching is mainly concerned with knowledge; the experimental group achieved a higher mean, despite not reaching the significance level.

In the skills dimension of achievement, the students taught according to the problem-solving strategy outperformed their counterparts who were taught according to the lecture-oriented approach. This finding concurs with the studies conducted by Wollson (2014) and Al-Shalawi (2014). This indicates that the problem-solving strategy improved students' skills in identifying the problem, collecting data, testing hypotheses, and drawing conclusions. All these skills are of great benefit to students during their university studies and in their daily life outside the classroom. This gives practical value to students' learning. Success in the labor market relies more on the mastery of skills than on the accumulation of knowledge.

The students in the problem-solving classroom significantly outperformed their counterparts in the lecture-oriented classroom in the values dimension of achievement. This finding is consistent with the studies conducted by Wollson (2014); Babatunde (2008) and Daf'allah (2009). This means that students develop positive values as a

result of persistently indulging in problem-solving. When students play an active role in reaching solutions to a given problem, they have a high sense of achievement and develop a better attitude towards learning.

Classroom observation during the intervention revealed that students in the problem-solving classroom interacted more actively than students in the lecture-oriented classroom. They were more enthusiastic and seemed to enjoy the spirit of teamwork that the problem-solving strategy fosters in the classroom. Occasionally, they voiced favorable views about teaching centered on problem-solving. They also mentioned that the problem-solving strategy gave their learning practical value. This is a significant contribution, as problem-solving is a life skill that is beneficial in all contexts.

10. Implications

The results of the current study reveal that student-centered instruction, represented by the problem-solving strategy, leads to better academic achievement than teaching based on lecturing. This applies to the teaching of all courses and subjects, including Islamic Studies. Teachers of Islamic Studies courses in Saudi Arabia conventionally use lecturing as their main teaching method. The reason for this is that lecturing on the part of teachers and memorization on the part of students are the main teaching and learning roles played by teachers and students in all religious courses. The results of this study show that student-centered instruction can be used to teach religious courses and leads to better learning outcomes than teacher-centered instruction. It is therefore recommended that teachers of religious courses be trained in the use of active learning-fostering teaching methods, e.g., problem-solving. The university's Deanship for Development and Quality has a significant role to play in this respect. It should provide the necessary training to teachers of religious courses. It is also recommended that the course specifications of courses on teaching religious subjects include problem-solving and other teaching methods that support active learning among their material on teaching methods. This can help guarantee that all teachers use such teaching methods in their classrooms, given that course specifications represent a contract between the university and faculty members. One further recommendation is that teachers of courses on teaching religious subjects hold seminars at the end of each semester to share experiences on the use of student-centered instruction. This can promote teachers' competence in using such methods to teach their courses.

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