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The Effect of Problem-Solving Strategy on Achievement and Retention of Meanings of Literary Genres

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This study aimed at identifying the effect of the problem-solving strategy on the achievement and retention of the meanings of literary genres among grade twelve scientific stream students in Jordan. The study tool was an achievement test prepared by the researchers, the study sample consisted of (65) intentionally chosen students who were randomly assigned into two groups: an experimental group with (32) students taught according to the problem-solving strategy, and a control group with (33) students taught according to the usual strategy. The results of the study showed that there were statistically significant differences at the level of ($\alpha = 0.05$) in the experimental group's achievement and retention at all levels and the total degree of achievement, moreover, the student's achievement in the post and retention measurements was better at all levels of achievement and the total degree of achievement than the pre-measurement, in favor of the experimental group. The study recommended providing training to language and literature teachers on utilizing efficient teaching strategies.

Keywords: literary genres, problem-solving, retention, academic achievement, students

INTRODUCTION

The process of effectively and attractively presenting study material to learners entails several steps, which would include varying teaching and evaluating strategies, clarifying the material's concepts in a way that allows learners to integrate it into their knowledge structure, and ensuring the attraction of their attention during the presentation,

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particularly for materials like poetry, music, rhetorical issues, and literary genres which appears to be challenging for learners to understand and memories. This process seems simple at first glance; however, it necessitates those in charge of the curriculum-making journey to conduct educational and literary research, and review relevant studies and experiences.

Problem-solving strategy is among the most essential teaching strategies that improve achievement for students, stimulate their motivation & ability to retain the meaning and semantics of the genres contained in the Arabic language textbooks for grade twelve scientific stream students. this strategy enables students to clarify concepts and techniques (Benjamin, 2020) and it stimulates students to analyze, interpret alternatives, and test hypotheses (Sudarsono, et al., 2022). Usually, when using a problem-solving strategy, teachers begin their language class with a literature-related question that challenges students. The teacher begins his language lesson by asking a question or probing a problem about the literary material that is mentally challenging for the students, such as: how certain literary material originated, And why this poem was listed in the book, Why we study the theory of literary criticism, can the study of language be completed without the study of literary genres? then the teacher asks students to study each issue from all the aspects and then put forward hypotheses to explain or solve the problem, starting with testing alternatives to reach the optimal solution. This strategy falls within the inductive method of teaching **(**Gyuzel et al., 2019; Hobri et al., 2020).

Literature enriches life and makes it look beautiful and funny in the minds of students, the short story pushes them to think, and the play roles help train the student to present competently (Sari et al., 2021). Effective teaching strategies are those that enable students to taste the beauty and enjoy the literary genres. One of the common problems that teachers practice, and it quenches students ' enthusiasm for the study of literary genres is forcing students to memorize certain literary texts without presenting their meaning, thus the student views literature as mechanical matters devoid of spirit and meaning (Al-Assaf et al., 2022; El-Freihat, et al., 2021).

The educators were aware of the effectiveness of teaching strategies in enabling the student to retain information and retrieve and employ it, they tried to study the factors that help in the long-term memory, and they found that organizing information and retaining it for a long time until it is recalled requires good organization and coding (Pashler, et al., 2008).

Literature aims at understanding the human psyche and shedding light on its subtleties and interactions with the environment, from the abundance of literature descends the literary genres that are indispensable to consider it an educational necessity. Since It is the channel of communication between human societies and their heritage; Literary genres are the material through which it is possible to: develop students' linguistic, intellectual, and expressive skills, spreads pleasure among the teachers, and refine the student's ability to express and interact with social and human values (Martínez-Valdivia et al., 2021).

Literary genres are important in several aspects, the most prominent of which is that they provide an opportunity for students to learn about human nature and see similarities and patterns related to their lives, learn about the tendencies and emotions of the human soul, and develop students' literary taste. This comes as a result of the effort invested by curricula experts and Arabic bs authors who are keen to select disciplinary and purposeful literary texts, which derive their subject from life. These literary texts guide the reader to strong, solid, and rooted relationships between self and life, and adds a new dimension to assessing reality (Al-Rikabi, 2000; Todorov,2019).

Based on the above, this study comes to investigate the impact of the problem-solving strategy on the achievement and retention of the meanings of literary genres for grade twelve scientific stream students. This study is considered one of the first studies – as per researchers' knowledge - in this field and researchers believe that the integration of Contemporary teaching strategies in the language curricula has become an educational necessity, as it helps learners to interpret the semantics of literary genre texts contained in Arabic language books for grade twelve scientific stream students and to interact more effectively with different life situations.

Study Problem

Through the work of researchers in the field of language teaching and supervising, authoring books, teaching its curricula, and teaching strategies to native Arabic speakers and non-Arabic speakers, the social importance of secondary school in shaping the student's future, they noticed a problem in the level of retention of the meanings of literary genres among twelve-grade scientific stream students (Allaham ،2004; Fayyoumi, 2017). Accordingly, the problem of the study can be identified in the following main question: What is the effect of the problem-solving strategy on the academic achievement and retention of the meanings of the literary genres among twelve-grade scientific stream students?

Study questions:

1. Are there statistically significant differences at the level of ($\alpha = 0.05$) in academic achievement and retention of the meanings of literary genres between the measurements: pre, post, and retention of the experimental group?

2. Are there statistically significant differences at the level of ($\alpha = 0.05$) in academic achievement and retention of the meanings of literary genres between the measurements: pre, post, and retention of the control group?

3. Are there statistically significant differences at the level of ($\alpha = 0.05$) in academic achievement and retention of the meanings of literary genres in the post-measurement between the two strategies of problem-solving and regular learning?

Study objectives

- Recognizing the effectiveness of the problem-solving strategy in academic achievement and retaining the meanings of literary genres among twelve-grade scientific stream students.

- Identifying the statistically significant differences in the achievement and retention of the meanings of the literary genres in the post-measurement between the two strategies of problem-solving and regular learning among twelve-grade scientific stream students.

The importance of the study

It is anticipated that this study will open prospects for researchers in the field of teaching strategies. Also, it can benefit language supervisors and teachers in identifying the effectiveness of the problem-solving strategy in academic achievement and developing motivation to learn and retain the meanings of literary genres, it may help decision-makers to include multiple and attractive teaching approaches in language teaching curricula. Moreover, it might assist language curricula authors and supervisors to conduct training programs for teachers to examine their knowledge of effective teaching strategies, and their ability to employ them in teaching literary genre texts.

Terminologies and procedural definitions

Problem-solving: "The ability to derive results from given information, it's a type of performance in which the individual relies on known facts to reach the unknown, by understanding and realizing the causes and factors involved in the problems he is trying to solve" (Al-Adl et al., 2003, 98).

Procedural definition: the set of mental operations that the student practices when solving any problem, and it is equivalent to the total score obtained in the achievement test prepared for that.

Retaining academic achievement: "the amount of information retained by students about the topics studied during the experiment period, and it is estimated by the scores of the achievement test that is re-applied in a manner equivalent to the first method without exposing students to any experiences between the experiences of the achievement and retention tests" (Zayer, 1999, 34)

Procedural defined: the students' ability to recall the knowledge they studied during a certain period, and it is measured by the average score obtained by students in the postponed achievement test, which is implemented after four weeks of applying the post-achievement test.

Literary Genres: Abdel Nour (1984, 89) defines them as "the genres that are handled in literature, each has distinguishing features related to the topic and style of expressions, such as prose genres including; rhetoric, history, theater, novel, journey, biography, letter, and article, and Poetics genres including; lyrical art, epic art, theatrical art: prose or poetry, and educational art.

Procedural definition: the literary genres that twelve-grade scientific stream students will study, namely: in the literature of friendship, health Education, you are love; Jordan, between originality and modernity, and the heart of a plant. The student's performance will be measured through the scores they will get on the achievement test prepared for this purpose.

Limitations and delimitations

- Human element limits: The application of the study was limited to grade twelve scientific stream students in one of the schools in the Naour district.

- Location limits: the application of the study tools were limited to one of the schools of the Directorate of Education in Naour District.

Time limits: The study was implemented in the first semester of the academic year 2022/2021.

The results of the study are determined by the validity and reliability of the study tools, and accordingly, it is not possible to guarantee to obtain the same results if other tools are used.

Literature review

Ashkanani study (2021) aimed to reveal the effectiveness of problem-solving strategy applied in an e-training environment in developing technical drawing skills and visual-spatial thinking among college of Education students in Kuwait. The study tools consisted of an achievement test, a notecard to measure technical drawing skills, and a test of visual-spatial thinking. The research sample consisted of (30) students. The researchers used the semi-experimental approach, and the results showed that there were statistically significant differences in the technical drawing test at the level ($\alpha = 0.05$) between the mean scores of the application of the pre and post of the experimental group in favor of the post-application, and to the effectiveness of the problem-solving strategy in teaching

Al-Saeed (2021) conducted a study aimed to identify the effectiveness of teaching according to the (STEM) approach in developing students' abilities to solve problems and used the descriptive-analytical approach to serve the purpose of the study. The study tool was a questionnaire applied to (50) middle school teachers. The results of the study indicated the effectiveness of the (STEM) approach in developing the students' ability to solve problems from the teachers' point of view, moreover, there were no statistically significant differences between the responses of the sample members according to the variables of educational qualification and years of experience.

Hanafi study (2021) aimed to reveal the relationship between positive thinking and life problem-solving skills. The study sample consisted of (65) male and female students from Ain Shams University, the study tool was to employ the scale of positive thinking, and the scale of life problem-solving skills. The results of the study concluded that there is an effective correlation between positive thinking and the skills of solving life problems among university students and that there are statistically significant differences between the average scores of males and the average scores of females in life problem-solving skills in favor of males, and the presence of statistically significant differences between the average scores of males and the average scores of Females in positive thinking skills in favor of males.

Saidia (2020) conducted a study aimed at investigating the effect of educational aids on developing problem-solving skills for ninth-grade students. The study sample consisted of (66) female students divided into two groups: an experimental group who studied using the educational aids strategy, and a control group who studied according to the usual method. The study tool was problem-solving skills test prepared for the purpose of the study. The results showed that there were statistically significant differences between the arithmetic averages of performance of the students of the experimental and control groups in favor of the experimental group.

Naima's study (2020) aimed to know the relationship between the academic load and the problem-solving strategy of fourth-year middle school students. The study sample consisted of (105) female students divided into two groups, experimental and control groups. The study tools were represented by employing the academic load scale and the problem-solving skills scale after modifying the psychometric characteristics in a way that suits the Algerian environment. The study concluded that there is an opposed relationship between the academic load of fourth-year middle students and the ability to solve problems.

Panjaitan & Rajajukuk (2020) conducted a study aimed at investigating students' abilities to solve mathematical problems using the learning model that based on employing problem-solving skills. The study sample consisted of (38) eighth-grade students who were divided into two groups: experimental and control. The study tool was a questionnaire and a training program prepared for this purpose. The results showed that the student's abilities to understand and analyze the problems elements using learning models based on problem-solving skills were as follows: (28.94%) of the students had a good ability to analyze the elements of the problem, (21.05%) of students had an appropriate ability, and (50%) of students had low abilities.

Al-Hamid (2019) conducted a study aimed at identifying the effectiveness of the (SNIPS) strategy in teaching the jurisprudence course on achievement and retention of the information among fifth-grade students. The study tools were an achievement test and a measure of attitude towards learning the jurisprudence course. The study was applied to (44) students divided into two groups: experimental and control groups. The results of the study showed that there were statistically significant differences between the experimental group and the control group in the post-application in the achievement test and the attitude scale in favor of the students of the experimental group.

Bouzaid (2018) conducted a study aimed at finding the effectiveness of a training program for visual perception and problem solving among children with dysgraphia. The study sample consisted of (30) students and the study tools were represented by the researcher's employment of the Cattell intelligence scale, a questionnaire developed by the researcher about dysgraphia, Andre Ray's visual perception test, a training program for visual perception, sentence, and word analysis scale, and letter writing analysis scale. After applying the steps of the visual perception training program, the results of the study showed that there were differences in the pre and post-measurement in all three dysgraphia scales: the paper organization scale, the sentence and word analysis scale, and the letter-writing analysis scale.

Sitindaon & Turnip's (2017) study aimed to investigate the effect of directed inquisitive learning using (PhET) on solving problems using a semi-experimental design. The researcher prepared a training program as the study tool, and the study sample consisted of two groups, an experimental and a control group. The results showed that employing the problem-solving strategy among the students of the experimental group was better than the students who were taught through the usual strategy, and inquisitive learning using PhET has an effective impact on problem-solving skills.

Observations on the previous literature

By reviewing previous studies, the researchers found that there are some differences in terms of the objective, study topic, the educational stage of the study sample, and the country in which they were conducted. Researchers noted that some of these studies aimed at revealing the effectiveness of the problem-solving strategy in achievement (Ashkanani, 2021; Hanafi, 2021; Thomas, Nial, & Raymond, 2020; Saidia, 2020; Naima, 2020), some other studies aimed at demonstrating the impact of the SNIPS strategy on achievement and retention (Al-Hamid, 2019), other studies focused on one of the literary genres (El Mousa, 2020; Panjaitan & Rajagukguk, 2020). , 2020; Bouzid, 2018), and some studied science topics (Saïdia, 2020). Most of these studies have adopted the empirical approach in their quest to reach their goals (Al-Saeed, 2021; Hanafi, 2021; Emre, et al., 2020; Naima, 2020; Al-Hamid, 2019; Bouzid, 2018; Sitindaon & Turnip, 2017).

This study has benefited from previous studies in forming a theoretical base from several aspects, the most important of which is: identifying the principles on which the problem-solving strategy is based. The current study is distinguished from the rest by being one of the first studies – as per researchers' knowledge - that investigate the effect of the problem-solving strategy on achievement and retention of the meanings of literary genres among twelve-grade scientific stream students.

METHOD

The study adopted the experimental method with two groups.

Study Sample

The sample of the study consisted of (65) students from the grade twelve scientific stream, who were intentionally selected from one of the schools of the Directorate of Education of the Naour district in the capital, Amman. The sample was randomly distributed into two groups: an experimental group with (32) members, and a control group with (33) members.

Study Tool

Researchers prepared an achievement test in five literary genres from the Arabic language book for the twelfth-grade scientific stream, from the first semester of the academic year (2021-2022), which are: in the literature of friendship, health education, you are love; Jordan, between originality and modernity, and the heart of a plant. The achievement test has been passed through the following stages:

- Analyzing the educational content, by defining special output, facts, concepts, rhetorical images, sea and rhyme, and conceptual maps. The content analysis was progressively presented to six Arabic language supervisors and teachers- with experience in teaching these courses - to ensure the clarity of each question and its alternatives, the extent of relevance, the grammatical accuracy of the paragraphs, and any other observations noted.

- Designing the specification table to achieve comprehensiveness and balance, and to indicate the validity of the content.

-Determining the vocabulary of the achievement test and preparing it in an initial form of (35) paragraphs according to the specification table.

Validity of the study tool

To verify the validity of the achievement test, it was presented to fourteen faculty members' referees from faculties of educational and psychological sciences in Jordanian universities, educational supervisors, and grade twelve Arabic language teachers for the scientific stream, to ensure the clarity and appropriateness of each question and its alternatives and the accuracy and integrity of the wording of the paragraphs. Based on their observations and suggestions, some paragraphs were reformulated, some were deleted, and the test was formed in its final form of (30) multiple-choice paragraphs. The paragraphs were classified as follows: (6,4,8). (2,20,27) at the level of knowledge and remembering, paragraphs: (16,1,13,30,11,12) at the level of comprehension, paragraphs: (3,7,22,14,19,21,25) in the level of application, paragraphs: (5,9,29,15,17,28) at the level of analysis, and paragraphs: (10,23,24,26,18) at the level of evaluation.

Stability of the study tool

To verify the stability of the test, it was applied in its final form to (33) non-sample students, and the Pearson correlation coefficient for the test stability was calculated, with a value of (0.81), which is a decent value that meets the purposes of the study, and Table (1) shows the Pearson Link Coefficient.

Table 1
Pearson link coefficient results for test stability

1st application		2nd application		Stability	Significance
Average	Deviation	Average	Deviation	Deviation	0.0001
21.56	8.12	22.10	8.85	0.81	

The difficulty was calculated for each of the test items using the following equation:

$$\text{Difficulty coefficient} = \frac{\text{number of students who answered wrongly on the items}}{\text{Number of students who tried to answer}} \times 100\%$$

The discrimination coefficient was also calculated for each of the test items using the following equation:

$$\frac{\text{Number of correct answers in the upper group - the number of correct answers in the lower group}}{\text{Number of students who tried to answer in one of the two groups}} \times 100\%$$

Study Variables:

Independent variables: problem-solving strategy.

Dependent variables: collection and retention

Study Procedures:

-Preparing the study tools and ensuring their validity and reliability.

-Obtaining official approvals for the study application.

-Carrying out the difficulty and discrimination coefficients for the study tool.

-Determining the study sample.

-Preparing an educational guide for teachers to show how to apply the problem-solving strategy.

- Applying the pre-test to members of the two groups: experimental and control groups.

-Applying the post-test to the members of the two groups.

- Applying the retention test to the members of the two groups: the control and the experimental, three weeks after the completion of the education procedures.

- Data processing, results in extraction, analysis, discussion, and recommendations. To ensure that the two groups: experimental and control were equal before applying the teaching strategies, one-way MANOVA was used, and Table (2) shows the arithmetic means

Table 2
The arithmetic means of the two groups' levels before application

Test paragraph level	Control Group	Experimental Group
Knowledge and recalling	4.56	4.84
Comprehension	2.95	3.45
Application	5.10	6.35
Analysis	8.46	8.14
Evaluation	4.00	3.90
Total score	25.07	26.68

Table (3) shows the results of the one-way analysis of variance for the significance of the differences in the skills of achievement and retention of the meanings of the literary genres among grade twelve scientific stream students in the pre-measurement according to the usual learning and problem-solving strategies:

Table 3
The results of the one-way analysis of variance for the significance of differences in achievement and skills to retain the meanings of literary genres

Levels	Source of variance	Degrees of freedom	The sum of squares deviations	Squares means	F	Indication*
Knowledge and recalling	Between groups	2	8.46	3.74	1.36	0.29
	Within groups	101	346.82	3.16		
	Total	103	355.28			
Comprehension	Between groups	2	3.65	1.88	1.42	0.30
	Within groups	101	120. 62	2.14		
	Total	103	124. 27			
Application	Between groups	2	38. 22	16.28	2.34	0.18
	Within groups	101	586.82	5.69		
	Total	103	625. 04			
Analysis	Between groups	2	12. 74	6.05	0.68	0.58
	Within groups	101	682. 47	5.95		
	Total	103	695. 21			
Evaluation	Between groups	2	2. 64	0.80	0.22	0.74
	Within groups	101	158. 75	1.64		
	Total	103	161.38			
Total score	Between groups	2	65.71	22.06	0.56	0.64
	Within groups	101	1895.48	16.8		
	Total	103	1961.19			

Table (3) shows that there are no statistically significant differences at the level of (α = 0.05) in the achievement and retention of the meanings of the literary genres among grade twelve scientific stream students in the pre-measurement between the problem-solving and the usual learning strategies, which indicates that the members of the two groups are equal.

Statistical Analysis

-Arithmetic means.

- Dependent multivariate analysis of variance (MANOVA) to test the difference between pre-and post-measurements and retention according to the learning strategy.

-One-way analysis of variance to determine differences in measurements and retention measures.

FINDINGS AND DISCUSSION

The first question: Are there statistically significant differences at the level of (α = 0.05) in academic achievement and retention of meanings of literary genres between the measurements: pre, post, and retention of the experimental group?

To answer this question, the researchers used multiple analysis of variance (MANOVA). Table (4) shows the arithmetic means of academic achievement

Table 4
Arithmetic averages of academic achievement and retention of the meanings of literary genres among the measurements of the experimental group

Levels	Maximum score	pre	Post	Retention
Knowledge and recalling	7	3.31	5.22	4.84
comprehension	5	3.22	4.12	3.12
Application	7	6.32	5.42	5.54
Analysis	6	5.62	6.25	6.74
evaluation	4	2.72	4.18	3.18
Total score	29	21.19	25.19	23.42

Table (5) shows the results of the multiple analysis of variance (MANOVA), using the Wilks Lambda to test the significance of the differences between the pre and post measurements, and the retention of the experimental group:

Table 5
Multiple analysis of variance (MANOVA), using the Wilks Lambda to test the significance of the differences between the pre and post measurements, and the retention of the experimental group

Level	Value of Wilks Lambda	Value (F)	Degrees of freedom of the numerator	Degrees of freedom of the denominator	Level of significance*
Knowledge and retention	0.32	70.62	2	42	0.0001*
comprehension	0.40	12.54	2	42	0.0001*
Application	0.84	1.80	2	42	0.15
Analysis	0.52	16.30	2	42	0.0001*
Evaluation	0.68	5.22	2	42	0.005*
Total score	0.55	92.20	2	42	0.0001*

*Is statistically significant at the level of ($\alpha = 0.05$)

Table (5) shows that there are statistically significant differences at the level of ($\alpha = 0.05$) in the academic achievement and retention of the meanings of the literary genres among the students of the two groups between the pre-post and retention measurements of the experimental group at all levels and the total degree of achievement except for the application level, where the differences were not statistically significant, and to determine the differences for the statistically significant levels and the total degree of achievement between the three measurements, the Sidak Post hoc test was used for post comparisons between the arithmetic means, as shown in Table (6) below.

Table 6
The differences between the statistically significant levels and the total degree of achievement among the three measurements

Level	Learning Strategy	Pre	Post	Retention
Knowledge and recalling	Regular		— 3.16*	—— 3.18*
	Problem-solving			0.24
Comprehension	Regular		—— 1.40*	—— 0.74*
	Problem-solving			0.52*
Analysis	Regular		— 1.66*	—— 1.18*
	Problem-solving			1.68*
Evaluation	Regular		—— 0.82*	—— -0.24
	Problem-solving			0.64*
Total score	Regular		—— 0.88*	—— 6.52*
	Problem -solving			2.28*

*Is statistically significant at the level of ($\alpha = 0.05$)

Table (6) shows that the student's achievement in the post- and retention measurement and the overall degree of achievement were better at all levels than in the pre-measurement, indicating that the problem-solving strategy has an effective impact on academic achievement and retention of the meanings of the literary genres for grade twelve scientific stream students, moreover, the achievement in the post-measurement was better than retention. Researchers could attribute students' superiority in the post-measurement over the pre-measurement to the attractiveness of the problem-solving strategy, which leaves a significant impact on the students' achievement and leads to an understanding of the educational material. As for the level of evaluation, the students' superiority in it may be attributed to integrating them with the stages of the problem-solving strategy. As for the level of application, in which individual differences were not statistically significant, the researchers may attribute this to the students' weakness in Syntax and morphology, and the results of this study agreed with the results of studies: (Hanafi, 2021; Saidia, 2020; Naima, 2020; Al-Sulaiti, 2003) and with the study of Ugur and Mete (Ugur, & Mete 2020) in the existence of statistically significant differences between the mean scores of the pre-and post-test for the members of the first experimental group in favor of the post-test.

Second question: Are there statistically significant differences at the level of ($\alpha = 0.05$) in academic achievement and retention of the meanings of literary genres between the measurements: pre, post, and retention of the control group?

To test the results of this question, the researchers used multiple analyses of variance (MANOVA) using the (Wilks Lambda) test. Table (7) shows the arithmetic means of academic achievement and the retention of the meanings of the literary genres between the pre and post- and the retention measurements for the control group.

Table 7
Arithmetic means of academic achievement and retention between pre, post, and retention measurements

Levels	Maximum score	Pre	Post	Retention
Knowledge and retention	6	3.22	5.24	4.12
Comprehension	5	1.70	1.68	2.78
Application	6	2.65	30. 9	3.22
Analysis	7	4.24	5.68	4.42
Evaluation	4	1.56	1.42	3.12
Total score	28	13.37	23.32	17.66

Table (8) shows the results of multiple analyses of variance (MANOVA) using the Wilks Lambda to test the significance of the differences between the pre and post-, and the retention measurements of the control group.

Table 8
The results of the multivariate analysis of variance to test the significance of the differences between the measurements: pre, post, and retention

Levels	Value of Wilkes Lambda	(F)	Degrees of freedom of the numerator	Degrees of freedom of the denominator	Level of significance*
Knowledge and retention	0.18	74.42	2	25	*0.0001
Comprehension	0.54	6.24	2	25	*0.002
Application	0.46	5.32	2	25	*0.01
Analysis	0.44	26.12	2	25	*0.0001
Evaluation	0.94	3.64	2	25	*0.03
Total score	0.19	115.74	2	25	*0.0001

*Is statistically significant at the level of ($\alpha = 0.05$)

Table (8) shows that there are statistically significant differences at the level of ($\alpha = 0.05$) in the academic achievement and the retention of the meanings of the literary genres between the pre, post, and the retention measurements of the control group at all levels and at the total degree of achievement, the Sidak Post hoc test was used for post comparisons between arithmetic means to determine the differences for the statistically significant levels and the total degree of achievement between The three measurements, as illustrated in Table (9) below

Table 9
The SEDAC test Results for dimensional comparisons between the averages of the three measurements in the control group

Levels	Value of Wilkes Lambda	(F)	Degrees of freedom of the numerator	Degrees of freedom of the denominator	Level of significance*
Knowledge and retention	0.18	74.42	2	25	*0.0001
Comprehension	0.54	6.24	2	25	*0.002
Application	0.46	5.32	2	25	*0.01
Analysis	0.44	26.12	2	25	*0.0001
Evaluation	0.94	3.64	2	25	*0.03
Total score	0.19	115.74	2	25	*0.0001

*Is statistically significant at the level of ($\alpha = 0.05$)

Table (9) shows that student's achievement in the post and retention measurements was better at all levels of achievement and the overall degree of achievement than in the pre-measurement, which may reflect that the usual learning style had a positive impact on academic achievement and retention of the meanings of the literary genres among grade twelve scientific stream students. The results also showed that the achievement in the post-measurement was better than in retention measurement, and the results of the students' dominance in the post-measurement over the two pre- and retention measurements at all levels could be related to using the usual learning strategies that enable students to clarify ideas and the sequence during the presentation and the familiarize the students with these strategies. These results are compatible with the results of (El Mousa, 2020; Al-Hamid, 2019; Ergawi, 2008), and (Harvey & Goudvis, 2010).

Third question results and discussion: Are there statistically significant differences at the level of ($\alpha = 0.05$) in academic achievement and retention of the meanings of literary genres in the post-measurement between problem-solving and usual learning strategies?

To test the results of the third question, one-way ANOVA was used. Table (10) shows the arithmetic means of academic achievement skills and retention of the meanings of literary genres in the post-measurement between the problem-solving and usual learning strategies.

Table 10
Arithmetic means of academic achievement skills and retention of the meanings of literary genres in the post-measurement between problem-solving and usual learning strategies

Level	Arithmetic means			
	Problem Solving Strategy		usual learning strategy	
	Education	Retention	Education	Retention
Knowledge and retention	7.15	8.22	6.68	7.62
Comprehension	3.64	3.62	3.12	3.14
Application	7.42	7.86	6.48	5.65
Analysis	10.22	11.08	9.34	9.08
Evaluation	4.32	4.24	3.25	3.06
Total score	32.75	35.02	28.87	28.55

Table (10) shows the results of the one-way analysis of variance for the significance of the differences in academic achievement and retention of the meanings of the literary genres in the post-measurement for grade twelve scientific stream students using problem-solving and usual learning strategies. Table (11) shows the source of the variance between the two groups, and the results of the analysis of Unilateral variance to indicate the differences in the post-measurement according to the learning strategies.

Table 11
Results of the one-way variance analysis for the significance of differences in the reading comprehension skills of Arabic vertical poetry in the post-measurement according to the learning strategies

Levels	Source of variance	Degree of Freedom	The sum of squares deviations	Squares means	(F)	Indication*
Knowledge and retention	Between the two groups	2	22.62	10.12	2.34	*0.34
	Within the two groups	101	420.28	3.48		
	Total	103				
Comprehension	Between the two groups	2	1.42	0.74	0.82	0.82
	Within the two groups	101	74.32	0.82		
	Total	103				
Application	Between the two groups	2	30.22	22.24	3.40	*0.32
	Within the two groups	101	512.72	3.82		
	Total	103				
Analysis	Between the two groups	2	54.12	26.64	3.52	*0.44
	Within the two groups	101	628.42	5.18		
	Total	103				
Evaluation	Between the two groups	2	1.16	0.76	0.64	0.64
	Within the two groups	101	142.14	1.52		
	Total	103				
Total score	Between the two groups	2			3.22	*0.48
	Within the two groups	101				
	Total	103				

Table (11) shows that there are no statistically significant differences at the level of (α = 0.05) in academic achievement and retention of the meanings of literary genres among grade twelve scientific stream students in the post-measurement of the skill of diacritical marks and pronunciation of letters between the two strategies of problem-solving and usual learning, while the differences are statistically significant in the rest of the comprehension skills and the total degree of achievement in the post-measurement between the two strategies of problem-solving and usual learning. To determine the statistically significant differences between the comprehension skills and the total degree of achievement according to the learning style, the Scheffe post hoc test was used for post comparisons between arithmetic means. Table (12) shows the results of the Scheffe post hoc test for post comparisons of the skills of understanding words from context, giving the intended meaning of the written symbol, determining the poet's purpose, determining Ideas from context, classification, and overall reading comprehension score between problem-solving andusual learning strategies.

Table 12
Results of the Scheffe test for post comparisons between the means in the post-measurement

Level	Learning Strategy	Pre	Post	
Knowledge and retention	Problem-solving			0.36
	Regular		— 1.26*	— 0.44*
Comprehension	Problem-solving			0.57*
	Regular		— 1.38*	— 0.28*
Analysis	Problem-solving			1.32*
	Regular		— 1.34*	— 1.36*
Evaluation	Problem-solving			0.46*
	Regular		— 0.82*	— -0.28
Total score	Problem-solving			2.42*
	Regular		— 4.48*	— 5.68

Table (12) shows all the differences in the skills of understanding words from the context, giving the intended meaning of the written symbol, determining the poet's purpose, determining the idea from context, classification, and the overall degree of reading comprehension in the post-measurement were in favor of the problem-solving strategy, while other comparisons related to diacritical marks were statistically insignificant. This result indicates that the problem-solving strategy is one of the best teaching strategies for developing achievement and retention skills according to these variables. The researcher may attribute the absence of differences in the skill of controlling diacritical marks among the members of the experimental group to the attention of students during the learning process because of the attractiveness of the problem-solving strategy in teaching languages and literary genres, moreover, research attributed statistically significant differences in the rest of the reading comprehension skills and the total degree to the impact of modern teaching methods such as problem-solving in developing reading comprehension skills and generating a stronger motivation towards learning. The above result agreed with the results of the following studies: (Hanafi, 2021, Mahmoud, 2002; (Feldhusen, et al., 2000), and it contradicted

the results of the Al-Abadi study (2004), which indicated that the performance of the experimental group members in achievement was higher than the performance of the control group members, while in retention the members of the control group performed better than the members of the experimental group.

CONCLUSION & RECOMMENDATIONS

This study examines the effect of the problem-solving strategy on the achievement and retention of the meanings of literary genres among grade twelve scientific stream students in Jordan. According to the results there were enhancement in achievement and retention among all levels. The study recommended providing training to language and literature teachers on utilizing efficient teaching strategies, moreover, it recommended employing contemporary learning strategies such as problem-solving in teaching language subjects.

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