

Remediation and Teaching of Arabic Grammar in the Middle East Using Divergent Problem Solving Strategies to Ensure the Accurate Use of Standard Arabic Grammar

Hana Abdallah

Submitted in Partial Fulfilment of the Requirements for the Degree of Master of Education, Buffalo State College Buffalo, New York

DOI: <https://dx.doi.org/10.47772/IJRISS.2025.915EC0060>

Received: 05 June 2025; Accepted: 14 June 2025; Published: 21 July 2025

INTRODUCTION

The study aims to shed light on the reasons why students, in this particular study students at Grade 12 level, experience difficulties with Arabic grammar. The course structure that is generally used has been criticized as being overloaded with grammar content. There is also the perception that this is not applicable to the students' daily lives and daily usage of the language. The end result is that students feel that the grammar, which they are taught, does not achieve a functional goal and that the grammar taught at school differs from that which they use on a daily basis. However, what these students fail to recognize, or choose to ignore, is that standard Arabic is required for Arabic studies at university level. Hence, the requirement to learn standard Arabic is not unreasonable and will, in the long run, contribute to their future success.

A criticism of the Arabic syllabus is that it does not concern itself with the sequence in which the grammar is taught in order for the students to develop their grammar skills sequentially and thereafter develop their language skills to express deeper concepts.

Whilst each lesson has specific teaching objectives the teacher needs to firstly, understand these language objectives and, secondly, the practical application of the objective in order to aid the students to overcome any difficulties they may encounter during the lesson.

Zakaria Ibrahim (1999) explains the purpose of teaching Arabic grammar in the following points: First, instructing the student regarding the methods used in Arabic grammar and, additionally, getting them accustomed to recognizing errors in what they read and hear to avoid the same errors in their speech, reading and writing. Second, gain the ability to control speech and correct pronunciation and writing. Third, help the students understand what they read and hear accurately. Fourth, increase information for the students with useful examples and applications. Fifth, increase the student's vocabulary by using the given examples, derivative training and dictionaries to extract the required words. Sixth, putting Arabic grammar into practice when reading, speaking and writing. It is the purpose of teaching grammar.

This study was aimed at teaching students to utilize problem solving skills to overcome difficulties they experience with standard Arabic, in particular with concepts or grammatical usage that is not used on a daily basis. The definition of a problem-solving strategy is the process or act of finding a solution to a problem. A critical problem that Arabic students face in the use of Standard Arabic is that their dialectic usage of the language might, or might not, involve correct usage of Standard Arabic grammar. The prime strategy that students were taught was to use Creative Problem Solving solutions when encountering difficulties with standard Arabic. As explained by Mitchell and Kowalik, this would involve the following: "A process, method or system for approaching a problem in an imaginative way and resulting in effective action." William E. Mitchell and Thomas F. Kowalik (1999)

Students were supplied with the means to apply creative problem solving skills to their studies, with the hope that this would empower them to independently find practical solutions to their grammatical dilemmas. They needed to follow a logical sequence in order to achieve this. Their first step was to identify and analyze the

problem areas in Arabic, such as the correct grammatical use of conjunctions. The second step was to find the causes of the problem which, in the case of students in the sample group, related mainly to their erroneous use of conjunctions, especially in their written work, in Standard Arabic. The third step was to identify the available alternatives to solve the problem. Fourthly, they had to develop a plan to implement the best and most practical alternatives. Thereafter, the fifth step was the monitoring phase and involved the implementation of the plan. The final step was the verification of the effectiveness and success of the solution plan. Implementation of these steps to explain Arabic grammar, along with practical examples, made it easier for students to clearly understand the rules, and thus have the ability and the needed skill to apply them.

Divergent Thinking strategies were used as the main tool to facilitate the students' problem solving skills. When using Divergent Thinking strategies, brainstorming is the preferred method to gather as many of the proposed ideas as possible without judging or evaluating them. This is done in a short period, with all the ideas being accepted and written down for a later discussion and eventual filtering. The strategies applied to the study were: Brainstorming and SCAMPER. These strategies, along with practical examples in Arabic grammar, allowed students to formulate questions, form sentences, answer questions and introduce ideas for introductions and conclusions of stories.

As their facilitator, I used these methods to strengthen students' problem-solving skills in creative ways, such as assisting them to practice brainstorming on an individual level. For example, I would give them a topic and they would brainstorm as many main and sub ideas relating to the particular topic as they, individually, could manage. Secondly, I encouraged them to adopt the questioning approach (what if) in an attempt to test the effectiveness of the proposed solutions within multiple phases. Thirdly, they were advised to keep a blog; to record creative ideas, even if they seemed far from the most logical solutions. Fourthly, I attempted to support them by playing games [such as Quizlet and Kahoot] to develop their logical thinking.

LITERATURE REVIEW

The study of grammar is closely related to the aims of education. The goals in studying grammar are to grasp the purposes of speech by understanding what we read, hear, write or say and being able to correctly comprehend it. The particular teaching method used in studying grammar is the standard method, the lecture method and thereafter, the evaluation. The evaluation process in studying grammar includes evaluating the process and evaluating the results. Evaluating the process means evaluating after completion of the course. The evaluation of the results aims to consider the students' achievement of the educational goals set in the school curricula. The main problem that students face in studying Arabic grammar relates to the use of diacritics. At the elementary school level, these are regularly supplied in the written Arabic text. However, the curriculum for High School Arabic eliminates these essential diacritics, resulting in poor reading and comprehension skills on the part of High School students (Wulandari, 2015, p. 26).

Methods used by a teacher to resolve the problems in studying grammar include not commencing with a new topic until the students clearly understand the previous topic. In other words, the teacher introduces the study materials in a graduated fashion to ease the difficulty in understanding and additionally, obligates the students to complete many, varied exercises to consolidate their understanding which encourages them to make a concerted effort when studying grammar (Wulandari, 2015, p. 27).

Many students suffer from difficulties in learning, comprehending, using and applying the rules of the Arabic language. These difficulties have a negative impact on the use and employment of the Arabic language. In some instances, these difficulties may be attributed to the course or university professor's style, the students themselves or the teaching methods and methods of measurement used. The university education stage is also the last educational stage in which all the capabilities, preparations, skills and property of the students are honed to employ all that he has learned in his future and practical life (Ahmed & Ali, 2018, p. 2).

The study, by Drs. Ahmed and Ali, recommended choosing grammatical topics in daily use in the lives of students and that university professors should raise the level of motivation among students towards learning Arabic grammar. The university professor should also use appropriate teaching methods, and maintain student interest, by measuring the levels of students' proficiency in areas such as understanding, application, analysis,

synthesis and evaluation. (Ahmed & Ali , 2018, p. 3).

Brainstorming can be used as a powerful management tool in academia and in business. This is because management, whether it be time management, resource management or management of one's studies, is an art and an integral part of day-to-day life. Students were encouraged to fully utilize their available libraries and thus discover various management techniques and tools for daily administration and organization of their studies. The modern era has raised different critical and difficult problems, but has also provided some useful techniques to solve them, such as six sigma, brainstorming, Total Quality Management [TQM] and Management by Objectives [MBO]. Brainstorming is an effective technique to increase creative potential in order to generate ideas. Better organized brainstorming also helps with problem solving, thus brainstorming becomes a problem-solving technique. It illustrates the collective, creative power of a group of people resulting in group productivity and is used to generate a large number of ideas in the shortest possible time to solve the problem. It is widely accepted as one of the tools in regular use in quality management. Brainstorming provides an environment free of criticism for creative and free exploration of options and ideas to solve problems (Kumbhar, 2018, p. 1).

In his study at the Princess Alia University College, Dr. Al-khatib investigated the effect of using the brainstorming strategy in developing creative problem solving skills among female students (Al-khatib, 2012, p. 29).

This was identified as one of the most important strategies in provoking creativity and solving problems in the educational, commercial, industrial and political fields. Brainstorming means the use of the brain to actively problem solve and brainstorming sessions aim to develop creative solutions to problems (Jarwan, 2005). On the other hand, creative thinking is known as a compound mental activity, aiming to direct a strong desire to look for solutions or reaching original solutions that were not known before (Jarwan, 2008).

Creative problem solving is based on the cognitive theory that adopts the concept of cognitive structure. It is the mental process of creating a solution to a problem. It is a special form of problem solving in which the solution is independently created rather than learned with assistance. Creative problem solving always involves creativity (Qattami, 2010). It can be defined as a frame of styles designed to help and enhance the comprehension of the problem and thereafter the generation of new and different solutions to the problem and, at the same time, assessing those solutions using creative skills (Gardner, 1999; Richard, Angle & Ann, 1999).

The thesis entitled Difficulties of Teaching Arabic to Speakers of Other Languages in Jordan (June 2014) was aimed at investigating the difficulties of teaching Arabic to those who spoke other languages in Jordan. The study showed that the non-native learners of Arabic have positive attitudes towards Arabic culture. However, they encountered numerous linguistic difficulties with the use of Modern Standard Arabic (MSA) when conversing with the native speakers of Arabic in Jordan. Comprehension was complicated by the use of colloquial Jordanian Arabic and when reading, the use of unpunctuated Arabic words. Moreover, the study unveiled the factors that caused these difficulties such as the existence of different varieties of Arabic, the linguistic differences between Standard Arabic and the students' language, in addition to the large number of morphological and syntactic restrictions in Arabic. Finally, different solutions were suggested to overcome these difficulties such as: integrating Standard Arabic with colloquial Arabic and establishing higher educational institutions where Arabic is taught & where teacher training takes place (Abu-Irmies, 2014, p.1-2).

The study entitled 'The Use of Bilingual Strategies to Teach Arabic as a Foreign Language' examined the strategies which Arabic language teachers use to teach Arabic as a foreign language. It also looked at the problems and challenges these teachers faced and the approaches they used to cope with these issues (Alalawneh, 2018, p. 1).

Arabic linguists should not argue about whether or not to include grammar in teaching; instead, the focus should be on the optimal means through which both grammar and communication are blended together to ensure high levels of accuracy and fluency. In order to achieve this, Taha (1995) suggests a list of three questions that deal with different elements surrounding grammar teaching. They revolve around the grammatical rules that should be taught in the classroom and the order in which they should be presented according to their functions; the grammatical mistakes committed at different levels and what steps should be

taken to fix them, and the grammar variations native speakers of Arabic use and how these variations influence Arabic language learners (Taha, 1995, p. 176).

There is a difference between the inclusion of grammar in beginner, and also some intermediate level books compared to that found in higher level books; grammar in low level books is not accompanied with detailed explanation, whereas, in higher levels books, grammar is presented with much explanation, resulting in a change too sudden that does not help students (Taha, 1995, p. 178). The order in which grammatical rules and structures are introduced in many books does not correspond with the precise rules that are needed for communication (Taha, 1995, p. 178).

The effectiveness of the SCAMPER technique (Substitute, Combine, Adapt, Modify, Put to another use, Eliminate and Reverse) on undergraduate students' creative thinking ability was investigated and documented by Ozyaprak. The purpose of SCAMPER is to implement lateral thinking which challenges the status quo and helps the individual to explore new possibilities. The findings of the study indicated that using SCAMPER in creative training enhanced participants' creative thinking abilities, especially for divergent thinking which was parallel to the literature. The effectiveness of creativity training required alignment between the creative technique studied, SCAMPER for the current study, and creative thinking skills aimed at developing with this technique, namely divergent thinking. Creativity training is valuable and effective, not just for gifted and talented students and K-8 graders, but also undergraduate students. SCAMPER can be used in a variety of settings, such as at school and within companies. The first reason for this is that SCAMPER provides an enjoyable environment for practicing creative thinking for all ages. Also, the leading questions in the technique present a concrete system to think flexibly and fluently. This is true, even if it is mainly divergent thinking; its use also involves a variety of cognitive skills like gathering information, conducting research, making combinations, flexible thinking, original thinking and problem solving. For example, the letter R in SCAMPER stands for Rearranging or Thinking Reversely and involves flexibility in thinking, since it requires thinking the reverse of the present order or rearranging existing patterns. These are examples of thinking out of the box. In this way students are encouraged to gain new and varied perspectives via SCAMPER. It can also be suggested that new and novel systematic creative training programs and models can be developed, as future studies, to include other creative thinking techniques, either separately or integrated. Alternately new teaching techniques, including basic creative thinking skills, may be developed (Ozyaprak, 2016, p. 32-33).

Ozyaprak concluded, at the end of the study, that teaching creative thinking techniques may positively affect creative potential and, in combination with other elements like personal characteristics, motivation, luck, climate of family/school and culture, is a valuable creative, problem solving technique. However, if creativity is considered as a cognitive process, it cannot be denied that there is notable data which points to the fact that the innate creative thinking ability of individuals can be stimulated and nourished through education (Ozyaprak, 2016, p. 34).

Research Purpose

The utilization of critical thinking methods is vital to problem solving as this will ultimately result in a positive impact on the educational process. The problem solving methodology, with particular reference to the teaching of Arabic grammar, was utilized emphasising the importance of the rules of Arabic grammar and their appropriate use. This topic has important implications for, particularly, high school students. Grade 12 students at Vision International School were chosen, who are preparing for the next stage in their educational career - i.e. that of university study. These students will benefit from this method in their scientific and work life, helping them to understand the logical connections between ideas; overcoming difficulties, solving problems systematically and more.

Research Questions and Hypotheses

First: Research Questions

The following research questions were considered:

Question 1: Is the problem-solving method important in teaching Arabic grammar?

Question 2: Will the frequent implementation of the problem-solving method in the Arabic, grammar class have a positive impact on the grade twelve students' performance?

Second: Research Hypotheses

Hypothesis 1: The problem-solving method will be important in teaching Arabic grammar.

Hypothesis 2: Grade twelve students' academic performance will improve by frequent use of the problem-solving method.

Definition of terms

- **Problem-solving** is the process of finding solutions to difficult or complex issues.
- **Academic performance** is the extent to which a student has attained their short or long-term educational goals.

Independent Variable

Grade 12 students, who were taught Arabic using the problem-solving strategies outlined in this study, needed to show the required dedication in the application of the strategies taught. Their success would be dependent on their commitment to the use of the new strategies in their study of Arabic grammar.

Dependent Variable

The desired end result will be an improvement in the teaching of Arabic by using problem-solving strategies. The primary strategy employed will be divergent thinking strategies, namely, brainstorming and SCAMPER.

METHODOLOGY

Firstly, an investigation was conducted to ascertain whether the problem-solving method is an important and useful tool in teaching Arabic grammar and, secondly, if the G12 students at Vision International School show an improvement in Arabic grammar with the utilization of problem-solving skills.

To address my research questions, I used the following methods:

The first method was a pre/post-test to establish, at the outset their initial level of skill and understanding of standard Arabic grammar and thereafter, with the post-test, to establish how much they improved, if at all, in their use and application of standard Arabic grammar.

For the purposes of this research project I gave the students open-ended exams or tasks to assess how much they had already learnt and how they expressed their knowledge. They were required to write creative essays expressly to assess how they expressed themselves, in writing, in standard Arabic. Assignments and tasks were differentiated for the students who struggled by supplying them with a storyline and asking them to provide an appropriate conclusion.

I used surveys as an alternate research strategy, requiring the G12 students to complete student surveys. Students were asked to record their thoughts regarding the effectiveness of using problem-solving in the learning process and were asked to write their opinions regarding the practical challenges they encountered. A typical example of a difficulty experienced by students was the use of correct conjunctions and, additionally, in which context specific conjunctions would be appropriate.

An action research intervention study was conducted with a static group in a pre/post design structure. Suitable times, within my teaching timetable, were identified for individual testing and interviewing of students, where research data was obtained.

This was collected through a pretest, at the start of the instruction period, followed by a post-instructional survey. The procedures were implemented over a month-long period, where problem-solving methods of intervention were applied during the chosen lessons. This was primarily facilitated by teacher intervention using brainstorming techniques and SCAMPER. Students were encouraged to also use brainstorming in their collaborative learning sessions. The teacher monitored the learning process and provided guidance on improving their results. Data gathered during the month was analyzed and compared against the data from the previous two weeks to identify whether there was any evidence to suggest that the intervention had had a positive impact on the students' usage of standard Arabic grammar.

FINDINGS

A pretest of all the students involved in the study, was first conducted to establish their level of proficiency in standard Arabic at the onset of the research. The pretest took the form of a survey completed by each participant to enable the progress of each to be tracked during the course of the teaching process. The group consisted of 28 participants of mixed gender.

One of the survey questions required the students to answer a question about the application of Arabic grammar. They were required to identify the incorrect verb in a particular sentence. They were given a choice of one out of five possibilities in Arabic and 60.7% answered correctly, highlighting the fact that, for many students, certain aspects of standard Arabic are not part of their daily usage. The post-intervention survey, on a similar grammar question, showed a significant increase with 75% of the students answering correctly.

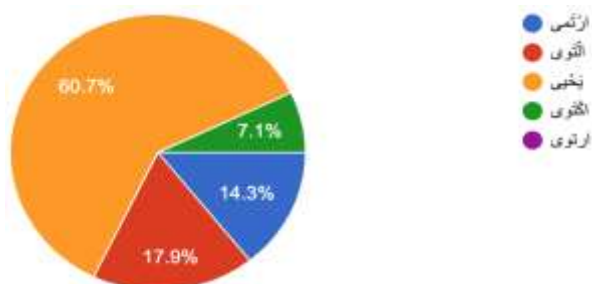


Figure 1: Student pre-test question 1.

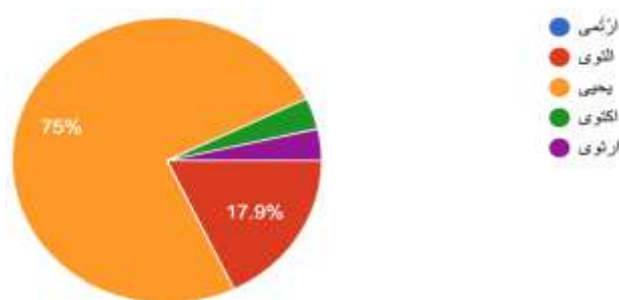


Figure 2: Student last-test question 1.

Another question related to the transference of an Arabic verb from the singular to the plural. Students fared well in this question and 92% answered correctly. However, in the post-intervention survey, there was a small increase in this figure as well with 96% giving the correct answer.

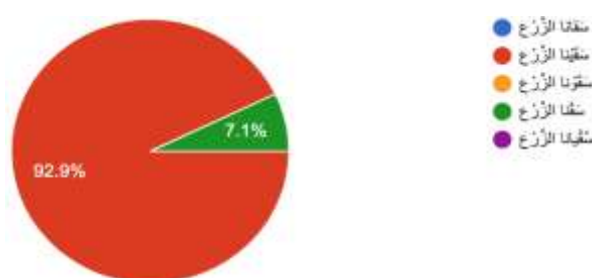


Figure 3: Student pre-test question 2.

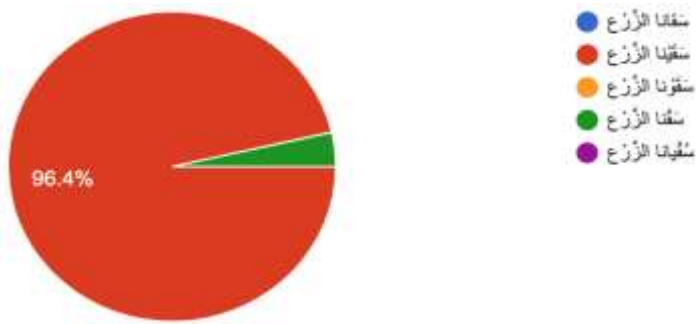


Figure 4: Student last-test question 2.

The next question is to determine the type of the last word in the sentence. At the pre-test 75% of the students answered it correctly. However, in the post-intervention survey, there was an increase in this figure as well with 82.1% giving the correct answer.

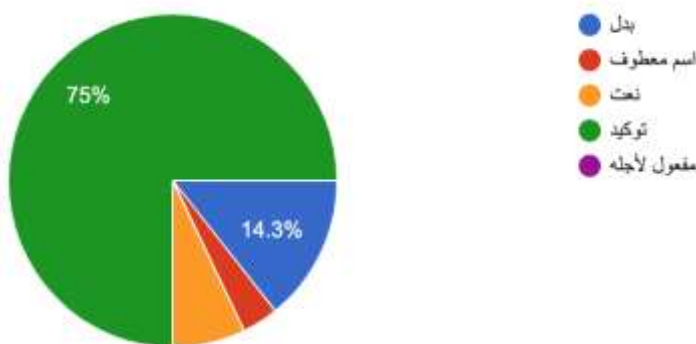


Figure 5: Student pre-test question 3.

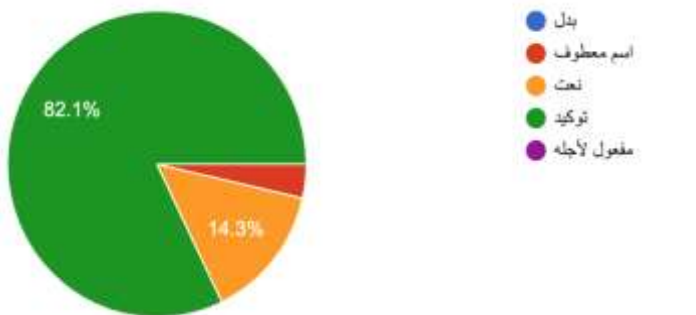


Figure 6: Student last-test question 3.

The selection of the correct conjunction can differ from Standard Arabic to the way it is applied in different Arabic dialects. With this in mind, the students were required to give an example of a sentence with the correct usage of conjunctions. This question showed a significant improvement in the post survey with 20/28 answering correctly, by comparison with only 13/28 in the pre-test.

Dialects do not differentiate between male and female and singular and plural in the written form. This is not the case with Standard Arabic, where the application of the correct diacritic is needed to make these distinctions. Sometimes, it is acceptable to exclude the diacritic where the meaning is very clear. The pre- and post-test survey required the students to write a sentence with the correct use of diacritics, conjunctions and adjectives. Unfortunately, the prevailing attitude toward the application of the diacritic, as required by Standard Arabic is: “Why should I apply the diacritic when the meaning is clear?”

In the pre-test, 10/28 had sentences that were correct, but only 5 students applied all the necessary diacritics. In the post-test survey, 15/28 had correct sentences, but only 4 students applied all the necessary diacritics.

Another survey was conducted to establish if their proficiency had improved in the use of Arabic grammar. The students were required to answer questions relating to how they apply the rules of standard Arabic grammar.

They needed to answer whether or not they readily understood what they were reading or if there was a need to read the question frequently before they were able to fully understand what they had read or if they required multiple readings in order to gain a proper understanding. Fifty percent required multiple readings in order to gain a proper understanding.

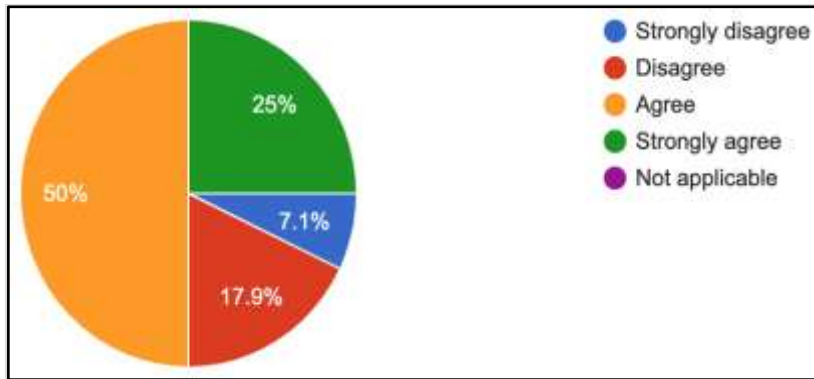


Figure 7: Grammar Application Level's question 1.

They were asked to comment on whether they were able to assign the past verb to the related subjective pronouns or whether they still experienced some difficulty with this. Over 80% were confident that they were able to correctly assign the verb, whilst 10% were not confident at all.

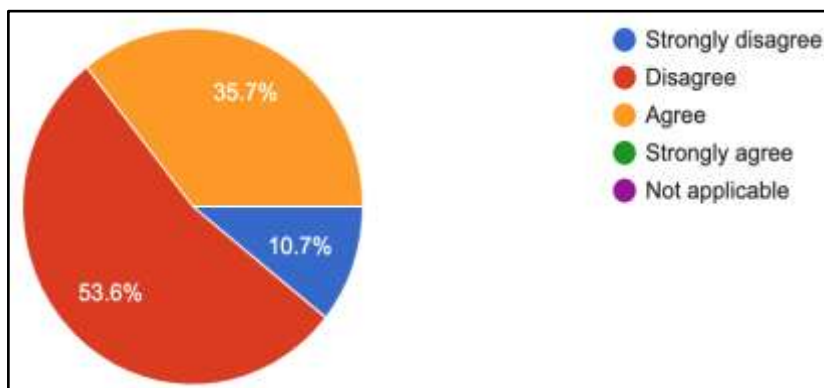


Figure 8: Grammar Application Level's question 2.

When asked if they were able to easily write the letter of Alif (الألف اللينة) at the end of the word, most of the students, with the exception of 14.3% were sure that they could.

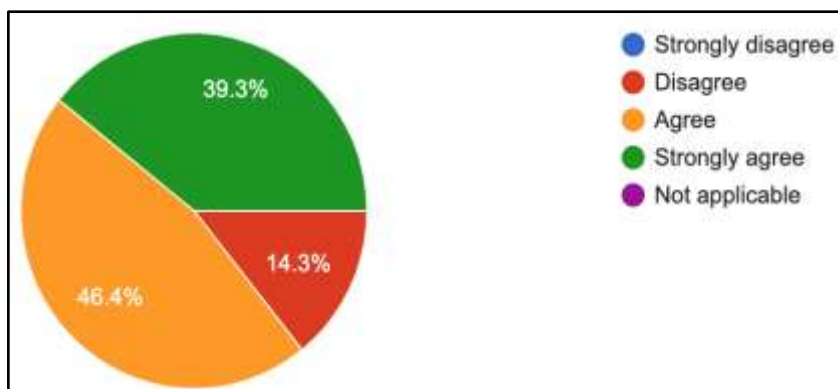


Figure 9: Grammar Application Level's question 3.

Students were asked whether they could determine the correct prescribed noun in sentences and if they were able to distinguish between the different types of Arabic adjectives. All students were confident they could do this.

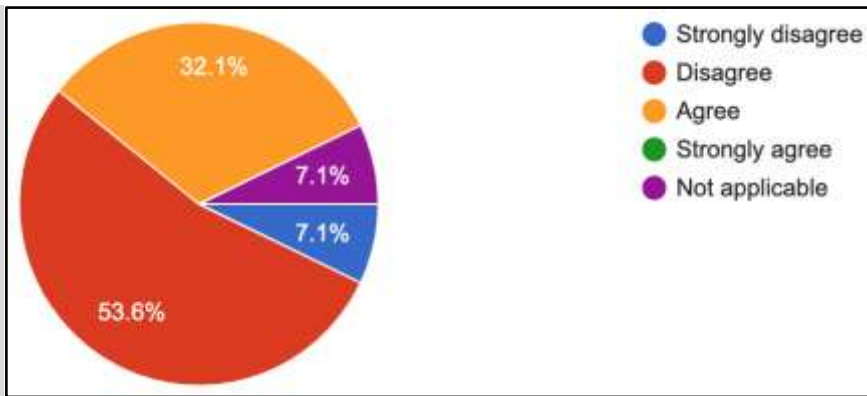


Figure 10: Grammar Application Level's question 4

They were also asked if they were able to distinguish between the different types of Arabic adjectives. All students showed an improvement in confidence regarding this aspect.

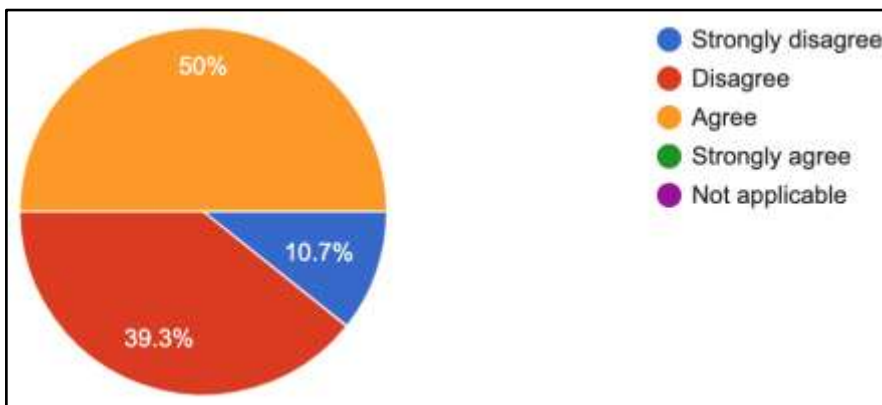


Figure 11: Grammar Application Level's question 5.

A further question asked whether or not they were familiar with the Arabic conjunctions. 75% were confident in this area, whilst 25% felt that they still needed assistance with conjunctions.

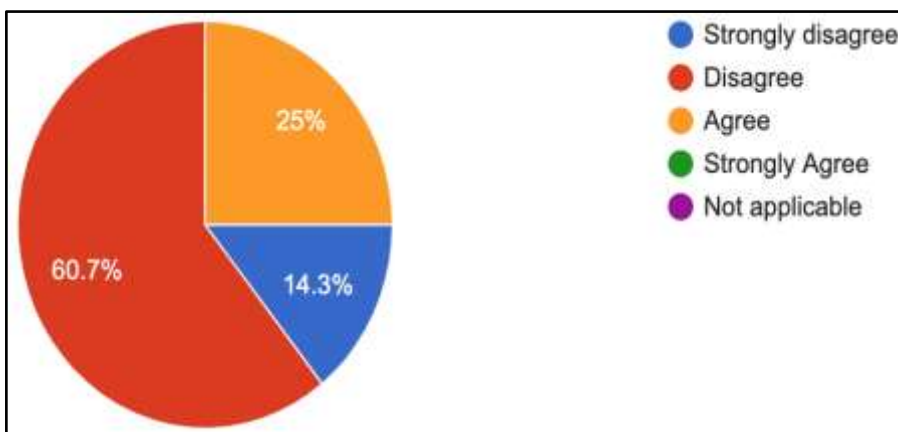


Figure 12: Grammar Application Level's question 6.

A question was posed regarding the use of traditional, Arabic deferential verbal titles and whether this was made easier with a better understanding of Arabic grammar? The answers to this question were evenly divided between those that felt that it did and those that didn't.

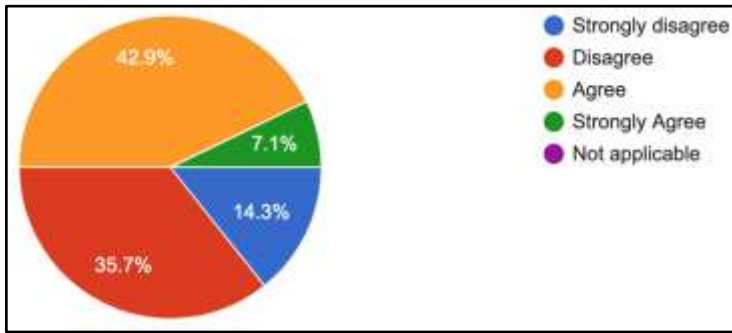


Figure 13: Grammar Application Level's question 7

Coupled nouns - correct use of conjunctions relating to the noun following a conjunction. In Arabic specific conjunctions and nouns are related to each other. Seventy percent of students were confident that they could do this accurately.

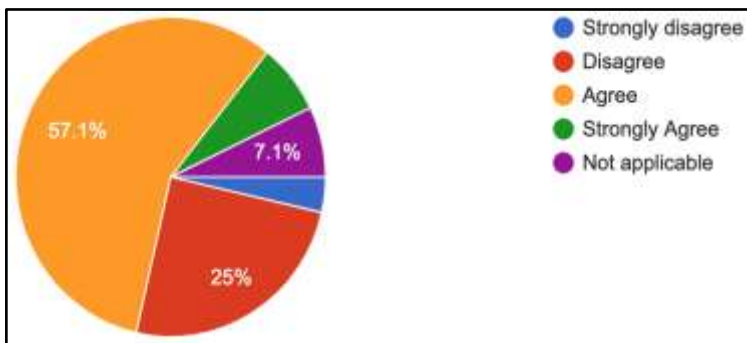


Figure 14: Grammar Application Level's question 8.

The students were surveyed on their ability to employ Arabic grammar in written sentences and here over 95% were satisfied that they were able to do this.

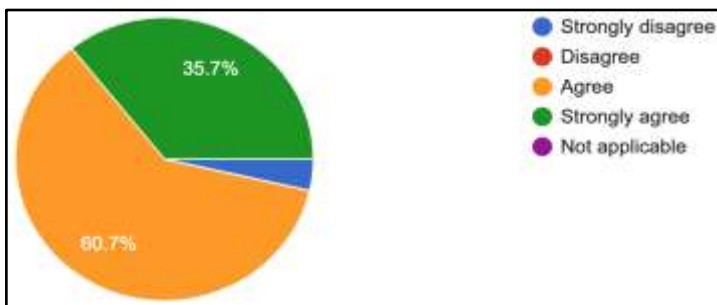


Figure 15: Grammar Application Level's question 9.

With regard to correction of errors, about 93% felt they had gained the ability to do this.

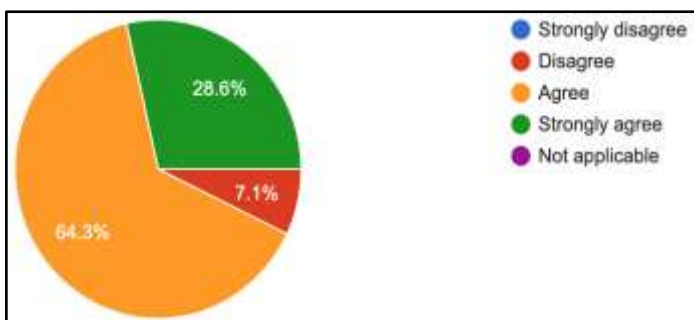


Figure 16: Grammar Application Level's question 10.

The post-remediation findings were also evaluated by means of a survey. The survey asked students about their preferred method of instruction in Arabic; whether they preferred to have a teacher provide an explanation or to work independently or collaboratively. They showed a willingness to use different learning strategies such as brainstorming and SCAMPER and to conduct searches in Google, but had a preference for working with the teacher rather than independently.

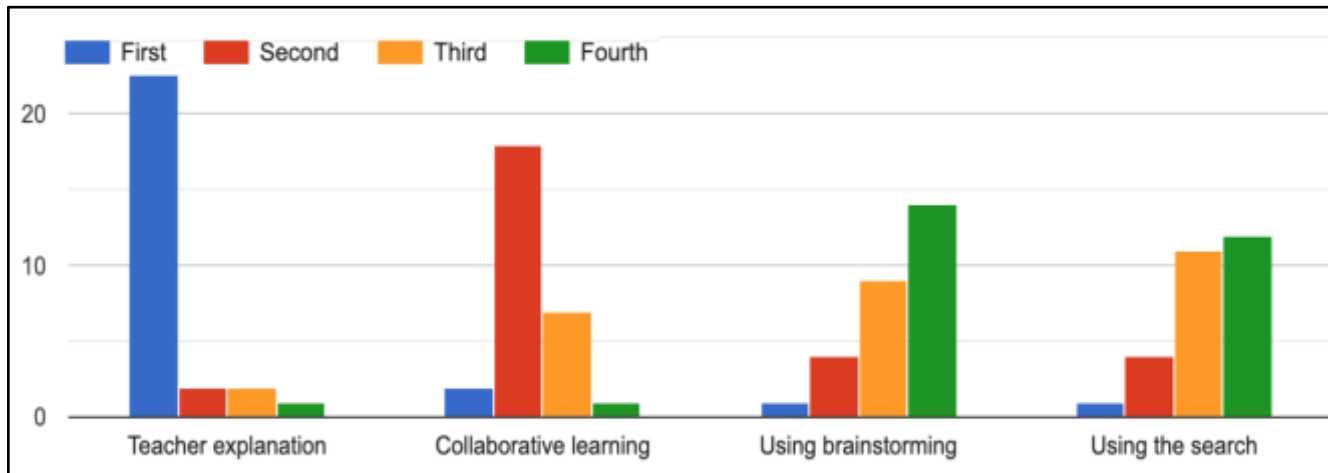


Figure 17: Benefits of Studying Arabic Grammar's question 1.

The students had to specify the benefits [or not] of studying Arabic grammar and were asked to state in which ways they felt they had benefitted [or not] from the intervention. 20/28 responded positively, showing appreciation and a greater understanding of Arabic, as evidenced by the statements below:

My language has improved.

My understanding of Arabic structures has enabled me to avoid making mistakes when writing in Arabic grammar.

My speech and dialogue skills have improved with a better application of Arabic grammar and diacritics.

My daily use of Arabic has improved.

As my understanding of written Arabic has increased, so has my understanding of the written language, the beauty of the Arabic language and this has broadened my imagination and ability to read Arabic.

I now understand the rules of Arabic much better.

I am able to read the Quran skillfully.

There were 8 students who did not feel that they had benefited from the intervention and their responses included:

I do not understand the rules of Arabic grammar.

I still have difficulty in applying Arabic grammar rules.

I don't know.

When asked whether the use of brainstorming and SCAMPER had had a positive impact on the students' understanding of Arabic grammar, none reported any impact whatsoever. Seven point one percent of the students felt it had limited value, whilst 35.7% felt it had a moderate impact. Another 35.7% felt that the use of these problem-solving strategies had had a big impact on their understanding and 21.4% felt that the strategies learned were a vital tool to their future progress in the use and application of Arabic grammar.

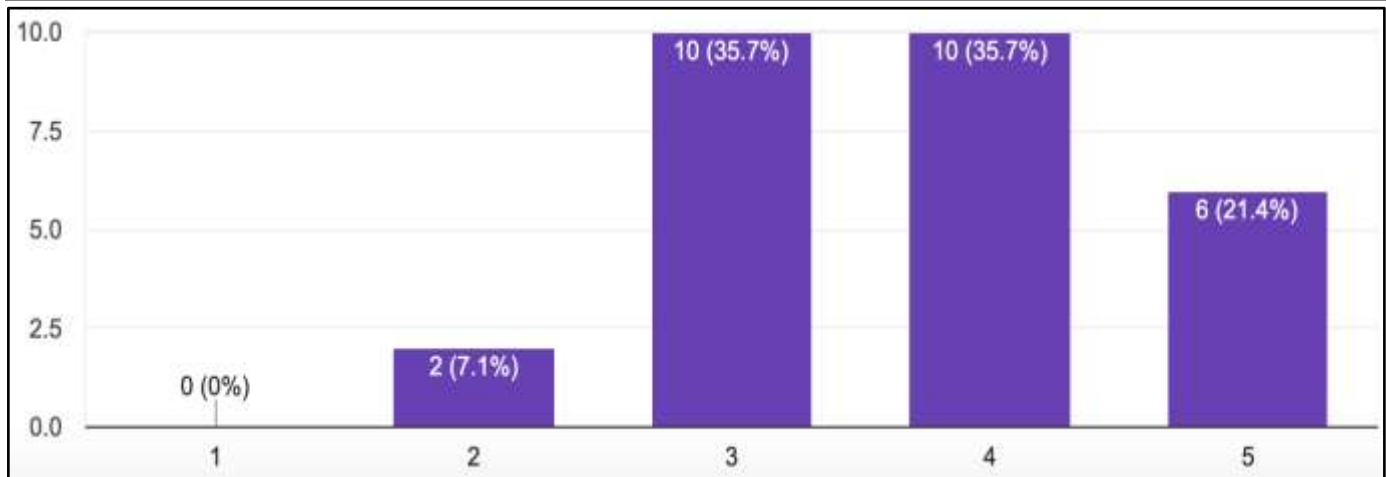


Figure 18: Benefits of Studying Arabic Grammar's question 3

The answers to the above questions have a substantial bearing on their daily use of standard Arabic which impacts not only their academic achievement but also their aspirations for the future.

Other project considerations

The aim of this study was to strengthen the students with their preparation of 21st century learning within the academic environment where they will need to creatively solve problems and to learn and work independently. Students were encouraged to express themselves through the use of a wide range of strategies, to enrich and enhance their future learning and lives. An important component was to instill a sense of ethics, care and compassion for others through engagement in community service and global citizenship. The future benefit for the school would, hopefully, be the domino effect of an improved use of Arabic within the school environment.

The weaknesses identified and experienced during the duration of the project was the frequent absences and tardiness of some students along with a lack of interest on their part in making up the work lost. An administrative problem was that that school's timetable doesn't allow for the desired number of lessons required for optimum efficiency in teaching this subject. A lack of scientific reference works related to the subject of Arabic language was also a prohibitive factor.

CONCLUSIONS AND RECOMMENDATIONS

The study has revealed that teaching and learning Standard Arabic grammar can be enhanced with the use of problem solving strategies to overcome difficulties with certain concepts and grammatical structures. Students need these problem solving skills to overcome these difficulties with standard Arabic as opposed to dialectic, common Arabic. An important factor in achieving this goal is for the students themselves to make an effort to use the problem solving strategies they're taught. For some students, achieving this goal was neither important or desired. However, those who applied themselves to the study achieved a significantly enhanced understanding of Standard Arabic grammar. More importantly, their comprehension of standard written Arabic was augmented and this, coupled with a good attitude, should stand them in good stead as they go on to pursue their chosen university careers.

The students found, during this study, that their use of conjunctions, the reading of Arabic diacritics and their associated pronunciation has improved. They also indicated and demonstrated that their reading of Arabic, with or without diacritics, has improved. There were those students who showed little interest in the aims of the study and their results reflected that lack of motivation.

Students understand what they are hearing, but despite this, they often mispronounce Arabic words by deferring to the common dialectic usage or by misplacing the emphasis where words are written without diacritics. This could form the basis of a further study to improve their verbal skills.

A further study could be undertaken to increase their fluency when reading material without diacritics. Currently, the students struggle to find the correct pronunciation in text that does not have diacritics and this slows the fluency with which they read.

REFERENCES

1. Annie Ward; Howard W. Stoker; Mildred Murray-Ward (1996). "Achievement and Ability Tests - Definition of the Domain". Educational Measurement, 2, University Press of America. pp. 2-5, ISBN 978-0-7618-0385-0
2. Assaad, F. (1987). " Thé effect of teaching problem solving and creativity courses on students9 problem solving knowledge, stratégies, skills, attitudes, aptitudes and creativity. La Direction Générale de L'Enseignement Collégial and Champlain Régional Collège.
3. Basadur, M. S., & Finkebeiner, C. T., (1985). "Measuring préférences for ideation in créative problem solving training.", Journal of Applied Behavioral Science. 21, 37-49.
4. Basadur, M. S., Graen, G. B., & Green, S. G. (1982). "Training in créative problem solving: Effects on ideation and problem finding and solving in an industrial research organization", Organizational Behavior and Human Performance, 20,41-70.
5. Chi, M.T.H., Glaser. R., & Rees, E. (1982). "Expertise in problem solving". In Sternberg (Ed), Advances in the psychology of human intelligence (vol. 1: 7-75) Hillsdale, N.J.: Erlbaum.
6. Cormier, W.H.; Otani, A; L.S. Cormier, (1986). "The Effect of Problem-Solving Training on Two Problem Solving Tasks.",Cognition Therapy and Research, Vol. 10, No. 1, pp:. 95-108.
7. Ibrahim, Zakaria (1999). Difficulties of understanding the Arabic grammar in university education for non-specialists as a study requirement from the point of view of the students "Faculty of Education as a model".
8. L. Larson, (1983). Problem Solving Through Problems, Springer-Verlag, New York.
9. Lehoczky, S. & Rusczyk, R (1993). The Art of Problem Solving. Greater Testing Concepts.
10. Resnick, Lauren. (1987). Education and learning to think. Washington, D.C.: National Academy Press. Retrieved 9/4/07: http://books.nap.edu/openbook.php?record_id=1032&page=R1.
11. William E. Mitchell and Thomas F. Kowalik (1999). Creative Problem Solving, (3rded), San Diago https://www.academia.edu/8707593/Creative_Problem_Solving-Mitchell_and_Kowalik

APPENDIX

Table 1: Student pre-test questions

One of the following verbs is incorrectly written: *

- | | |
|-----------------------|--------|
| <input type="radio"/> | ارتقى |
| <input type="radio"/> | التوى |
| <input type="radio"/> | نخبى |
| <input type="radio"/> | المثوى |
| <input type="radio"/> | ارتوى |

If we assign this past verb "Water" to the related subjective pronoun (us), we will say: *

- | | |
|-----------------------|-------------|
| <input type="radio"/> | سقىنا الزرع |
| <input type="radio"/> | سقىنا الزرع |
| <input type="radio"/> | سقىنا الزرع |
| <input type="radio"/> | سقىنا الزرع |
| <input type="radio"/> | سقىنا الزرع |

The last word in the following sentence (I greeted the Emir himself): *

- | | |
|-----------------------|-------------|
| <input type="radio"/> | بدل |
| <input type="radio"/> | اسم معطوف |
| <input type="radio"/> | نعت |
| <input type="radio"/> | توكيد |
| <input type="radio"/> | مفعول لأجله |

Give an example about the conjunction that means arrangement and inaction: *

Short answer text

Give an example about the adjective: *

Short answer text

Table 2: Student last-test questions

One of the following verbs is incorrectly written: *

- | | |
|-----------------------|-----------|
| <input type="radio"/> | ارْتَمَى |
| <input type="radio"/> | الْتَوَى |
| <input type="radio"/> | نَحْيَى |
| <input type="radio"/> | اَكْتَوَى |
| <input type="radio"/> | ارْتَوَى |

If we assign this past verb "Water" to the related subjective pronoun (us), we will say: *

- | | |
|-----------------------|----------------------|
| <input type="radio"/> | سَقَلْنَا الزَّرْعَ |
| <input type="radio"/> | سَقَيْنَا الزَّرْعَ |
| <input type="radio"/> | سَقَوْنَا الزَّرْعَ |
| <input type="radio"/> | سَقْنَا الزَّرْعَ |
| <input type="radio"/> | سَقِيلْنَا الزَّرْعَ |

The last word in the following sentence (I greeted the Emir himself): *

- | | |
|-----------------------|-------------|
| <input type="radio"/> | بدل |
| <input type="radio"/> | اسم معطوف |
| <input type="radio"/> | نعت |
| <input type="radio"/> | توكيد |
| <input type="radio"/> | مفعول لأجله |

Give an example about the conjunction that means arrangement and inaction: *

Short answer text

Give an example about the adjective: *

Short answer text

Table 3: Grammar Application Level questions

I need to read the question frequently *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Agree
- ☐ Strongly agree
- ☐ Not applicable

I find it difficult to assign the past verb (الفعل الماضي) to the related subjective pronouns (ضمائر الرفع المتصلة) *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Agree
- ☐ Strongly agree
- ☐ Not applicable

I can easily write the letter of Alif (الألف اللينة) at the end of the word *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Agree
- ☐ Strongly agree
- ☐ Not applicable

I feel difficult to determine the adjective (النعت) and the prescribed noun (المنعوت) in the sentences *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Agree
- ☐ Strongly agree
- ☐ Not applicable

I feel difficult to distinguish the types of adjective (النعت) *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Agree
- ☐ Strongly agree
- ☐ Not applicable

I find it difficult to know the conjunctions (حروف العطف) *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Agree
- ☐ Strongly Agree
- ☐ Not applicable

I feel difficult distinguish between verbal affirmation (التوكيد اللفظي) and moral affirmation (التوكيد) *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Agree
- ☐ Strongly Agree
- ☐ Not applicable

I can easily extract the coupled name (الاسم المعطوف) *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Agree
- ☐ Strongly Agree
- ☐ Not applicable

I have the ability to employ Arabic grammar in useful sentences *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Agree
- ☐ Strongly agree
- ☐ Not applicable

I have the ability to identify and correct the error *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Agree
- ☐ Strongly agree
- ☐ Not applicable

Table 4: Benefits of Studying Arabic Grammar questions

What is the best way to understand Arabic grammar? Please list them in order by number *

	Fisrt	Second	Third	Fourth
Teacher explanation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collaborative learni...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using brainstorming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using the search	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What did you benefit from studying Arabic grammar? *

Long answer text

What is the impact of the problem-solving method (Convergent Thinking strategies, brainstorming and scamper) on teaching Arabic grammar *

	1	2	3	4	5	
Low impact	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	The impact is very strong

Table 5: Project Timeline

Task	Date	Description
Test 1	January 5th, 2020	Pre-test questions for students of G12 at VIS.
Survey	January 16th, 2020	Grammar Application Level questions for students of G12 at VIS.
Survey	February 27th, 2020	Benefits of Studying Arabic Grammar's questions of G12 at VIS.
Test 2	March 1st, 2020	Last-test questions for students of G12 at VIS.

[illegible][illegible]

Table 8: Grammar Application Level questions

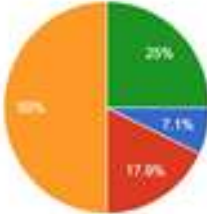
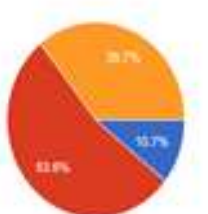
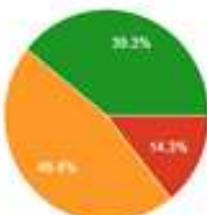
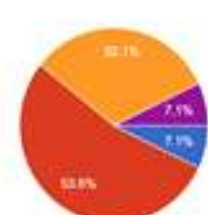
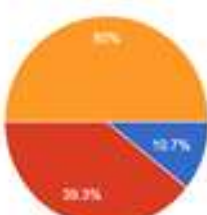
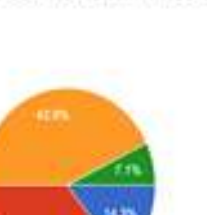
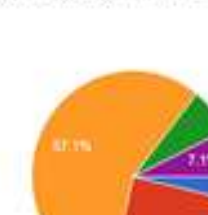
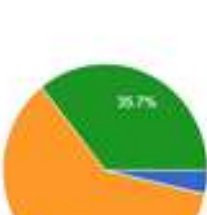
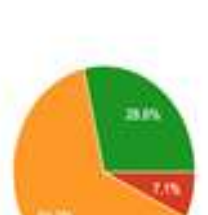
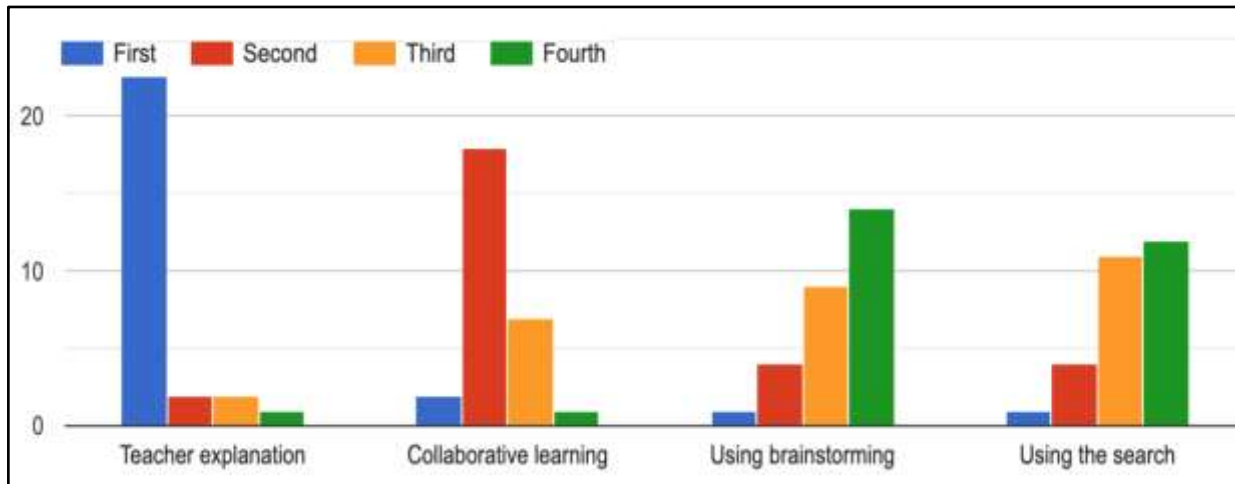
<p>I need to read the question frequently</p> <p>28 responses</p>  <ul style="list-style-type: none"> Strongly disagree: 7.1% Disagree: 17.9% Agree: 59% Strongly agree: 25% Not applicable: 0% 	<p>I find it difficult to assign the past verb (الفعل الماضي) to the related subjective pronouns (ضمائر ترفع المتصلة)</p> <p>28 responses</p>  <ul style="list-style-type: none"> Strongly disagree: 10.7% Disagree: 32.8% Agree: 38.7% Strongly agree: 0% Not applicable: 0%
<p>I can easily write the letter of Alif (ألف التنية) at the end of the word</p> <p>28 responses</p>  <ul style="list-style-type: none"> Strongly disagree: 0% Disagree: 14.3% Agree: 46.4% Strongly agree: 39.3% Not applicable: 0% 	<p>I feel difficult to determine the adjective (الصفة) and the prescribed noun (المنعوت) in the sentences</p> <p>28 responses</p>  <ul style="list-style-type: none"> Strongly disagree: 7.1% Disagree: 53.6% Agree: 32.7% Strongly agree: 7.1% Not applicable: 0%
<p>I feel difficult to distinguish the types of adjective (الصفات)</p> <p>28 responses</p>  <ul style="list-style-type: none"> Strongly disagree: 10.7% Disagree: 39.3% Agree: 59% Strongly agree: 0% Not applicable: 0% 	<p>I find it difficult to know the conjunctions (حروف العطف)</p> <p>28 responses</p>  <ul style="list-style-type: none"> Strongly disagree: 14.3% Disagree: 60.7% Agree: 25% Strongly agree: 0% Not applicable: 0%
<p>I feel difficult distinguish between verbal affirmation (التركيب القلبي) and moral affirmation (التركيب المعنوي)</p> <p>28 responses</p>  <ul style="list-style-type: none"> Strongly disagree: 14.3% Disagree: 35.7% Agree: 42.9% Strongly agree: 7.1% Not applicable: 0% 	<p>I can easily extract the coupled name (الاسم المصروف)</p> <p>28 responses</p>  <ul style="list-style-type: none"> Strongly disagree: 7.1% Disagree: 25% Agree: 57.1% Strongly agree: 7.1% Not applicable: 0%
<p>I have the ability to employ Arabic grammar in useful sentences</p> <p>28 responses</p>  <ul style="list-style-type: none"> Strongly disagree: 0% Disagree: 0% Agree: 60.7% Strongly agree: 39.3% Not applicable: 0% 	<p>I have the ability to identify and correct the error</p> <p>28 responses</p>  <ul style="list-style-type: none"> Strongly disagree: 0% Disagree: 7.1% Agree: 54.3% Strongly agree: 38.6% Not applicable: 0%

Table 9: Benefits of Studying Arabic Grammar questions

What is the best way to understand Arabic grammar? Please list them in order by number.



What did you benefit from studying Arabic grammar?

28 responses

استفدت من الدراسة عدة اشياء منهم فهم القراءة اكثر، معرفه جمال اللغة العربيه، و خيال اوسع من ناحيه القراءة

انا ما فهمت بعض الدروس

يساعد على التعرف على صحة او ضعف التراكيب العربية وتجنب الوقوع في اخطاء التأليف

استفدت كيفية تكلم اللغة العربية مع الحركات

اصبحت اقرأ القرآن بمهارة واكتب بمهارة

كيفية الكتابة بشكل صحيح

النحو والصرف

دراسة القواعد تساعد في كتابة السليمة

تنمية مهارات اللغة بصفة عامة

التطوير في الكتابة والتعبير

لا شيء، فقط المعلومات إضافية

علم

ازدادت مهارات الكتابة لدي. بالإضافة الى مهارة الحوار والقراءة

استفدت كيفية كتابة رساله وكيفية التحدث الى الاخرين وكيف ممكن ان نستخدم القواعد بطريقة صحيحة

تقويت لغة في القصاحه , مراجعت من ما درسناه في الماضي و تطويره في درس او اسلوب جديد

طريقة استعمالها في حياتي

فهمت القواعد

لم افهم الكثير من الاشياء

في الحقيقة ولا شيء

اشياء عديدة واصبحت افضل في القواعد

فادتنني في تعليم القراءة

لنهار فادتنني في القراءة

الفكر

What is the impact of the problem-solving method (Convergent Thinking strategies, brainstorming and scamper) on teaching Arabic grammar?

28 responses

