Using the Osborne Model to Develop Grammar Concepts in Morphology Teaching and Learning

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Abstract

The study aimed to investigate the effectiveness of teaching a unit of grammar using Osborne's model of creative problem-solving, to help secondary school students in the United Arab Emirates develop grammatical concepts. The study sample consisted of 62 tenth-grade students from the Elite School in Abu Dhabi, with 32 students in the experimental group and 30 students in the control group. The participants were purposefully selected during the academic year 2023/2022. The results indicated statistically significant differences in favor of the experimental group taught according to Osborne's model of creative problem-solving in developing grammatical concepts. The study provides several recommendations, including retesting Osborne's model for developing grammatical concepts on both male and female students and across different grade levels. We also suggest that teachers consider using Osborne's model during their teaching or incorporating some stages of the model into Arabic language curricula, particularly in general education stages. Also, to implement the Osborne model to develop thinking skills at different levels, specifically critical thinking skills, creative thinking, and problem-solving.

Keywords: creative problem solving, grammatical concepts, Osborne model, secondary school students

1. Introduction

Education stands as a paramount priority for the developmental agendas of countries across the globe, particularly in emerging nations. This is underscored by the intricate interplay between education and the advancement, sustenance, and refinement of societies. Recognizing this vital nexus, the government of the United Arab Emirates (UAE) is steadfast in its commitment to educational progress, directing its efforts towards the attainment of national objectives. Central to this endeavor is the recognition of language instruction as a cornerstone for enhancing education across all domains, with the ultimate aim being advancement and enrichment. Within the framework of national guidelines and perspectives, the Arabic language occupies a unique position, serving as the primary vehicle for imparting the teachings of the Quran and the traditions of the Prophet, as well as facilitating a nuanced comprehension of Islam to ensure the accurate performance of Islamic duties. Fundamentally, morphology serves as the foundational step towards language comprehension, skill mastery, and the proficient execution of linguistic tasks with precision and efficacy. Before developing its general frameworks, the Ministry of Education started investigating weaknesses in educational methods and outputs and asked all related groups (parents, students, teachers, economists, businessmen, researchers, and others) to participate in this topic. An investigation of the weaknesses in, and development of, a general framework on the national standards of courses was made under the supervision of one of the specialized international centers; it was found that teaching language is the main priority and the first step in developing the educational system.

The lexical structure mentioned by linguists makes it easier to explain structures to students. The morphological system or morphology is an important system that helps the improvement cycle to grow because it includes rules for constructing words and permits the structure of the word to be investigated (Abd Fareh, 2021). Grammatical concepts constitute the basics of the science of etymology that defines the structure of words that are neither diacritic nor in base form.It is a series of rules by which the weight, movements, features, base, and prepositions are known. Morphology in practice concerns converting the root of vocabulary to different words that convey the intended concept. It is the only

way to convey the concept, such as changing the word science to the scientist, or evidence to evident (Bitar, 2004).

Understanding morphological concepts is pivotal for grasping the logic, structure, and intricacies of the Arabic language. Mastery of these concepts' safeguards against lexical errors while also bolstering proficiency in writing through adherence to grammatical rules. Moreover, proficiency in morphological rules enhances verbal, cognitive, and cultural aptitude in language learners. (Irons & Majboor, 2020). Morphology deals with the derivation of words and those responsible for teaching the Arabic language in the United Arab Emirates understand the importance of Arabic grammatical rules for protecting language; this importance extends to the correctness of vocabulary and language concepts, which can lead to the correctness and well-being of thought. Teachers therefore use special learning methods for these rules that are evident in high school (second round). The linguist Al-Khezri also mentions this in a footnote, as explained by Ibrahim (2019), in terms of emphasizing morphology before learning the syntax. He defines morphology as, 'the science of using rules from Arabic words based on which we learn the changes in the Arabic words when they are single such as اعلال, merge, omission, assimilation and also when they are combined such as Arabicized and producing the base form of the word' (Al-Khezri, 2003).

Despite numerous studies dealing with issues in learning and teaching morphology and its concepts, there are still some weaknesses. This is evident in the writings of students and different language situations. This may be because research alone is not enough to improve educational level and the teaching of morphology. Therefore, our research deals with a model for helping high school students develop concepts of morphology. By this, we mean the Osborne model, which relies on creative problem-solving; the latter is one of the most common methods in teaching for motivating creativity, innovation, and the development of creative thinking and communicational skills. It is a program and solution that helps students have a better understanding and awareness of their thoughts and ideas, thus creating a fighting spirit in the search for knowledge and cognition, and improving problem understanding, creating ideas and planning (Chen & Chang, 2021). What makes this model even more important in the teaching process is that the learner has a positive and active role in learning and teaching. This is because they have gained or corrected ideas and can use their information and experience to find a suitable solution to a problem. This method improves their creative thinking and increases their language achievements because the model is based on the reality that the mind is not only the receiver of the information but is also active in extracting and interpreting ideas (Sarhid, 2017).

In this context, it is possible to say that the educational development of morphological concepts is based on a creative model of problem-solving. This helps to create language knowledge that not only has informational thinking skills that make the learner's experience more important and more developed, but also helps them to solve educational, social, and personal problems.

1.1 Research Problem

The research problem stems from the fact that teaching morphological concepts is problematic and not functional because it is based on educational methods and strategies that do not consider the nature of a course, abstract features, and idiomatic concepts in morphology. Numerous studies have unequivocally demonstrated the pronounced challenges that students encounter with this concept across various educational stages. Research has shown that there are evident signs of errors, such as mistakes in derivation, mistakes in producing the name of the agent, name of the object, exaggeration form, tenor object, and mistakes in an unconventional form of derivation (Barghouth, 2012; Othman & Abdulahi 2012; Abdul Qadir, 2015; Abbas, 2018; Mu'ayyadah; 2020; Ali, 2021).

Some research relates a student's success rate to their weak understanding of the morphological and grammar rules and the method of teaching grammar; it suggests they are separate from the practical aspects of language, and this makes it more difficult for students to learn. Consequently, students do not understand their values, take them for granted, and avoid them. Moreover, using theoretical methods does not help with teaching morphological rules. The lack of connection between teaching these rules with meaning and the lack of practical application and realistic application of these rules makes them intolerable and unfruitful. Accordingly, we cannot obtain the goal of empowering learners with the ability to use classic Arabic language in writing and speaking in a real way (Zayed, 2006). If we consider the development of morphological rules to be important for students at different levels, it must be more significant for high school students, because they have a better understanding of abstract concepts, and their understanding ranges from the sensual to the abstract level. This improves their ability to analyze and infer, and maximizes their intelligence and deduction (Soqli, 2022).

On the other hand, the research has explained the effectiveness of the Osborne model with different educational topics and shown its positive effect in improving educational development (Al-Khattab & Al-Khawalada, 2020; Al-Saeedin et al., 2021). This, by itself, supports the idea of using the model to develop morphological concepts that are one of the most important tools for strengthening verbal language in reading, writing, speaking, and listening comprehension, and

for tasting its joy and the feeling of its grammatical aesthetics. Based on this, two research questions are proposed. First, what are the elements of a morphological course based on the Osborne model in the development of morphological concepts among students of the tenth grade in the United Arab Emirates? Second, what are the effects of teaching a course on morphology based on the Osborne model?

1.2 Research Hypothesis

There are statistically significant differences between the experimental group and the control group, and the test has a positive effect on the educational development of the experimental group.

1.3 Research Goals

This research is an attempt to compile a course based on the Osborne model, and to explain the effect of using the Osborne model in teaching a course in morphology to students in the United Arab Emirates.

1.4 Research Significance

We hope to explain the main steps in the Osborne model in the field of morphology more effectively for some morphological concepts. The results can help to develop programs for the Arabic language, especially in the field of morphology and related topics by explaining the effects of one course of morphology on tenth-grade students in the United Arab Emirates. Hopefully, the results (in case of approved effects on a course of morphology in the field experiment) will help teachers and students of Arabic language by facilitating their learning and teaching, and related topics, and we expect to see fewer problems with the acquisition of concepts and skills.

1.5 Research Scope

The research is limited to identifying the effects of teaching a course on morphology (tenor adjective and the exaggeration form) in developing the related concepts. This is limited to the tenth-grade schools in the city of Abu Dhabi in the United Arab Emirates, from October 1, 2022, to the first semester of the educational year in 2022/2023.

1.6 Glossary

Osborne's model to solve problems creatively is an organized way of thinking that seeks to produce a maximum number of ideas to solve a problem. This method uses the mind to make the problem smaller (Osborne, 1963).

Definition of research: this is defined as a series of actions implemented while teaching a course. These actions include understanding the problem, producing the idea, planning, and implementation.

Metaphorical morphological concepts: to morph based on the Ibn Asfour Ishbili is a change in the form of the word to another vocabulary for lexical and semantic purposes (Al Ishbili, 1987).

Definition of the rhetorical concepts in the research is a series of abstract mental pictures that expresses the combination of features and properties related to the tenor adjectives and the forms of exaggeration, related to the structure of the word and how it is made. To understand improvement in the experimental group, an improvement text was implemented which was prepared for this purpose and it is expressed based on the obtained results from the experimental group.

Tenth-grade is a class that belongs to a high school in the United Arab Emirates.

1.7 Introduction to the Osborne Model: Solving Problems Creatively

The Osborne model is one of the models that develops thinking and one of the most common models or methods to improve creativity and problem-solving skills. It is based on the division of two processes to create ideas and implement them. This model is like an innovation conference with a special method of creating a list of ideas that can act as the key to creating public ideas without limitations. These ideas are faced with open realities not covered by shame or limited by stagnation or prejudice. This is an organized method of thinking when we use the mind to attack the problem from different perspectives to create the maximum number of ideas to solve a problem (Osborne, 1963).

1.8 Implementing the Osborne Model Creatively

The Osborne model includes a series of steps. Each step depends on the previous step mentally and functionally. These steps are described next.

First Step: accomplish creativity

The first step is to accomplish creativity in the learner, and here we try to define the concentrated problem because defining the problem helps with finding suitable alternatives. Therefore, this element helps identify a mechanism that enables people to concentrate their efforts on solving these problems in three steps. The first is the obscure problem,

which is based on determining the limits and choosing one general goal. By investigating the problem and splitting the problem into smaller pieces, it is possible to set one or more goals (Alsoror, 2002). Next is data collection, the purpose of which is to prepare materials and content to be used in the cognitive process. Knowledge can be stored in advance or collected by observation and asking questions from the learners (Ali, &et al., 2021). Lastly, the problem is narrowed down to overcoming the obstacles related to the solution and the method of making ideas that help to implement the solution or solutions by putting ideas onto a practical map and directing it into doing the job. Implementing the plan and doing the task according to the argument provides some opportunities alongside challenges (Alsoror, 2002).

Second Step: Creating the Idea

The ability to create includes using previous knowledge to add to the existing information. Creation by nature creates communication between new ideas and previous experiences in an integrated way. To relate new and old information, we need to organize, analyze, and present how parts are interconnected. Through creation, new information emerges within new structures

Third Step: Planning Action

The purpose of this element is to convert important ideas into executive realistic activities in two steps. The first is finding the solution to investigate, analyze, and assess ideas to choose the most suitable for problem-solving. In this stage, we focus on classification and detection skills. The second stage involves accepting the execution plan by focusing on the possibility of success with the chosen plan and identifying factors to help this process. This helps people to accept and move on with the plan. The stage also includes identifying probable obstacles during execution, studying how to overcome these challenges, and implementing suitable adjustments for a successful plan.

1.9 Features of the Osborne Plan

The plan is based on presenting the topic in the form of problems that enable students to think collectively and create and produce the maximum number of ideas. Meanwhile, they postpone criticism to another time dedicated to this (Osborne, 2001). In this respect, the Osborne model works on developing thinking skills generally and creative thinking specifically. This method challenges the ability to use metacognitive skills when faced with a problem, and the abilities are highly developed. It provides successful and the best solutions and in the next steps, it constantly tries to assess alternative options (Zair, 2014).

The model uses the brainstorming strategy and follows three steps: defining the topic in the study, creating the idea, and finding the solution (Al-Samiri, & et al., 2006).

The Osborne model is based on four basic rules. First, determining the final goal in the process of brainstorming (directed brainstorming), to produce the maximum number of ideas (solutions). Second, critiquing ideas from the first stage to conclude the brainstorm. Third, welcoming abnormal ideas or solutions as the center of attention, possibly because they show abnormal thinking that leads to a creative idea. Fourth, allowing the learners to combine ideas (suggested solutions) or collectively optimize them. Fifth, organizing the patterns of knowledge and experiences of the learners and putting them in a circle of knowledge, because it includes a collection of procedures and mental operations related to each other (Al-Bawi, 2023).

1.10 Morphing

Morphology falls between phonetics and syntax due to its reliance on the results of phonetics and focus on grammatical and semantical aspects. Thus, we consider the smallest unit with meaning or morphemes (Qadoora, 1999). Morphology studies the structure of a word in terms of form, syllable and phonetic elements that lead to the morphological and syntax meaning. Morphology as defined by many experts deals with 'formal aspects and morphological scales and their morphological relationship on one hand and derivational criteria on the other hand and then […] with related topics including adjuncts that are either before the word or in the middle' (Hassan, 2009). By those before the word, we mean prefixes that come at the beginning of the word, such as the Mozarefeh letter, and by those in the middle we mean changes that occur in the middle of the word, such as repeating one word or the subject form.

The most important thing an Arabic student can consider is to be focused on three topics: morphology, derivation, and learning the forms and rhythms because Arabic linguistic books pay high attention to these and spend so much time considering them. They are basic morphology, and we explain them in order now.

1.11 Morphology

Morphology 'is the knowledge of the roots. They are neither diacritical nor structural. The science of inflection leads to strong language and removes the errors in words and protects the correctness of language' (Mirzakhani, Ibnrasol, &

Shokrani, 2020). The science of inflection according to Ibn Ishbili means '[changing] the form of a word (for example changing the word shoot to the shooter) and the diminutive form and broken plural that is pseudo-derivative, unless it is the general inflection and special derivation after inflectional derivation, not every inflection is derivation. The difference between derivation and inflection is in inference to the branch or addition. If its inference is to the branch, it is inflection. For instance, we infer the word "احمر" (red) that hamzah is extra because it is taken from the word "حمره". So, حمره is the root that احمر is taken from' (Al Ishbili, 1987).

Experts on morphology in Arabic, for instance Ibn Jinni(1954), believe inflection to be important because experts in syntax and linguistics require this. It functions as an anchor (by which, the roots of Arabic words are distinguished from the additions) (Ibn Jinni, 1954). Arabic scientists hold a distinct fascination for morphology, viewing it as superior to other branches of Arabic sciences due to its inherent focus on word structure devoid of syntactical elements. It means a compound word is superior. Therefore, inflection is delayed due to accuracy, and learning morphology is an introduction. An Arabic student will not learn inflection unless by comparison they have done some exercises and have a full understanding of inflection upon which they can build morphology (Al Ishbili, 1987).

Morphology is more difficult than derivation. In every book on syntax, we find morphology in the last chapter, so inflection is the knowledge of the fixed word itself, while syntax is knowledge of changes in the words. For those who want to know syntax, it is necessary to begin with the science of morphology because knowing the fixed nature of everything must be the base to know the change in forms. Since morphology is a difficult science, we are forced to know syntax before morphology, and after learning morphology we how to perform exercises and create understanding that facilitates learning morphology. It is a tool to know the benefits of inflection and its meanings (Ibn Jinni, 1954).

Arabic linguists are interested in morphology for two reasons: first, a large portion of the language is obtained only by comparison, and this is done by morphology, because the propositions can be understood only by morphology. The second reason is that derivation can only be understood by inflection. Inflection has two parts: the first is to know a word in different meanings, such as shoot, shooter, shooting, shot, which are different combinations of the word shot used for different meanings. Changing the root form implies the occasional meaning of the word. For this reason, we see no changes in the meaning of the word قَول and قَوَلَ. (Al Ishbili, 1987, pp. 31-32).

1.12 Derivation

One of the distinctive features of the Arabic language is that it is based on different comparisons that help the protection and facilitate the language. Derivation as '[making] one or many words from another word that is done by the connection between the word and word we have made from because they correspond by verbal root and meaning. By this, the second word implies the first word. They are different by a proposition and a change in movements' (Al Hadithi, 1965). A derivation is 'one thing taken from the other and implies the nature of the object by maintaining features such as ظريف and عالم. They are derived from the source, for instance, فَهَّم is derived from فهم, and نَصَرَ is derived from نصر (Mirzakhani, Ibnrasol & Shokrani, 2020). A derivation is also a branch. It seems it makes the derivation into branches to make the origin come out in such a way that the origin is buried inside that (Al-Ishbili, 1987). Derivations are varied in the opinion of morphologists. Each has its own rules and forms based on which forms are created. The common point among the derivations is that they are taken from the root with the same meaning. The difference is that the form of the derivation and its letters has the same order among the derivations: subject noun, object noun, comparative nouns, time, place, present adjective, and instrument noun. There are three types: small, large, and larger, which are explained in detail in Ibn Jinni (1954).

1.13 Forms and Weight

It is important to know morphological forms because it helps us to know the language. It distinguishes right from wrong in language, discerning written from verbal forms. It aids in accurate reading, thereby facilitating a correct comprehension of scientific expressions. Morphological weight makes the language stronger by making new words, especially scientific vocabulary with morphological derivations in terms of meaning and words (Azeddine, 2023) that are created with continuous growth and diversity in scientific fields. Compounds are related to words. Arabic words are based on formulas with three rules (ف ع ل) called morphological values. These roots are organized in different forms. Therefore, the difference in terms of the compound is the difference between the forms to show the unit meaning.

1.14 The Importance of Concepts in Verbal Morphology

The importance of Arabic morphology is evident in that it empowers the learner to pronounce the word based on the diacritical marks produced by Arabs. It is also necessary to study morphological concepts in syntax analysis since this means recognizing the verbal elements, such that the forms, duties, and compound relation between them are determined based on the place and the meaning of the word, and morphological analysis and syntax analysis is placed

below. Learning Arabic morphology is a necessary introduction to studying and using an Arabic dictionary and knowing the root form of the word looked up in the dictionary. It is based on the omission of extra letters, reinstating removed letters, correcting incorrect words, and restoring merged letters to their original state. It is necessary to learn morphology, especially for singular and plural, Elal and Ebsal, which is about changing or deleting long vowels.

1.15 Morphology and Verbal Skills

Morphology is about making words, derivations, and weights, which is what makes it important in learning a language. Boanani & Warbie (2015) proved that developing spelling awareness among students in the fourth and sixth grades is related to developing morphological knowledge in three parts: awareness of inflection, awareness of derivation, and awareness of weights and forms. This is shown in the literature (Benson-Goldberg, 2014). However, in many Western languages with alphabetic systems, the basic methods of teaching derivation to children are more time-consuming and come with higher cognitive costs. As Amayra (2019) showed, language efficiency is obtained by comprehensive interaction in language; for instance, a morphological element gradually promotes verbal capabilities by improving word structures and rules. However, the component element aids language learners in improving their language skills and integrating morphological and syntactic rules to express spoken and written events clearly and coherently.

2. Previous Research

Al-Shajiri and Valrawi (2018) attempted to identify the effect of the Osborne model on developing the knowledge of second-grade high school students Islamic education lessons and to measure their attitudes. The findings showed a difference between the average of the control and test groups. The difference was statistically meaningful. Research by Al-Khattab and Al-Khawalda (2020) considered the effect of computer education programs using the Osborne model to develop creative thinking for problem solving with tenth-grade students. The findings showed obvious differences between the scores of the test and control groups. The scores of the test group were higher. Research by Al-Saeedin et al. (2021) investigated the effect of using the Osborne model in teaching geography to improve learning among female seventh-grade students; the results showed obvious differences between the scores of the test and control groups. The scores of the test group were higher.

2.1 Explaining Previous Studies

It has become clear that the above studies are concerned with the following topics. First, they are about thinking and creative problem solving (Al-Khattab & Al-Khawalada, 2020). By developing tools such as tests to identify the effect of the Osborne model on the level of thinking skills and problem-solving skills, the research was able to measure the improvement. Second, the research is about educational improvement (e.g., Al-Shajiri & Valrawi, 2018; Al-Saeedin et al., 2021). These studies pay great attention to improvement, which is the final goal of students and institutions, while also focusing on tests and explaining the effect of the model on development. This study considered how to trigger higher metacognitive skills and found a higher level of thinking among the sample population of higher-level students. Fourth, obtaining concepts and related disciplines was studied by Al-Abidine Shahbaz (2017). This research focused on concepts because they are important for increasing improvement, developing multiple levels of knowledge, and improving the results of the students. Each student gained problem-solving skills based on their educational level. The current study is about developing concepts.

3. Methods

3.1 Sample

The study used a test approach and semi-test design to obtain its goals. We used two groups: test and control. The control group studied lessons in the usual way and the test group used the Osborne model. Teaching the course based on the Osborne model represents the independent variable and developing concepts is the dependent variable. It is known with the post-test for the test group and the test in the control group with the usual way and the independent variable and the results were obtained by the post-test in the dependent variable. The sample included 65 students in the tenth grade from the Schools of Elites in the Mohamad bin Zayed. We chose this school because it accepted the application of the model. This school is near the university which is the working center of the researcher. The test and control groups were chosen with the following methods. To investigate the statistical equivalence of the test and control groups, two groups of tenth-grade students were chosen. The averaging method of their scores in the Arabic language of the ninth grade is shown in Table 1.

Table 1. Estimated Average, Standard Deviation, and t-value Tabulated for Scores

Group	Number	Average	Standard deviation	Degree of freedom	*t*-value		Sig.
					Estimated	tabulated	
Test	32	81.27	6.17	60	1.13	2	0.05
Control	30	82.13	6.97				

Table 2. Estimated Average, Standard Deviation, and t-value Tabulated for Average Ag

Group	Number	Average	Standard deviation	Degree of freedom	*t*-value		Sig.
					Estimated	tabulated	
Test	32	181.04	3.78	60	0.0513	2	Not significant
Control	30	181.11	3.52				

The average pre-test scores of the test and control groups are as in Table 3.

Table 3. Estimated Average, Standard Deviation, and t-value of Test and Control Groups in the Morphology Pre-Test

Group	Number	Average	Standard deviation	Degree of freedom	*t*-value		Sig.
					Estimated	Tabulated	
Test	32	49.34	3.64	60	0.736	2	Not significant
Control	30	48.63	3.32				

From the tables, it can be noted that the test and control groups were equivalent.

3.2 Tools

The research used two tools to obtain the research goal. First, a lexical course was chosen from the tenth grade, to include two lessons on the topic of adjectives and exaggeration form that were designed based on the Osborne model. Then, the course was given to the experts in the Arabic language and curriculums, teaching methods, and teacher of the tenth grade. Some corrections were made based on the items, their orders, and information registered in the course. The appearance validity was established in this unit. Second, the researcher designed a test to measure the improvement of students in the test and control tests based on the following considerations. The content analysis indicated the course was based on lexical programs and the learning results were determined by the validated textbook. In this regard, the test items were formulated as multiple choice and the number of items in the initial test was 24. The face validity of the test was confirmed by a group of experts in Arabic and teaching methods and specialized teachers in the field of Arabic teaching. The construct for items and their number was corrected. Item 4 was removed, and, at the end, 20 items remained. The test was conducted on a sample of tenth-grade students (n=34). Therefore, the test was reliable. The discriminant factor of the items was between 0.41–0.46, which is acceptable for this research. According to this result, the items were acceptable and implementable because the literature tells us that a good test is one with a difficulty degree of 0.2–0.80 (Al-Kabisi, 2007).

Following these steps, the tool was ready to use, and the researcher implemented the course designed based on the Osborne model with the control group. This group used the course in a normal way with four classes in a four-week period, because the two groups started the course based on the program of the tenth grade on the last month of the educational year. When the course was finished by the two groups, the next test was given to the two groups.

4. Results and Analysis

What are the elements of a morphological course based on the Osborne model in the development of morphological concepts among students of the tenth grade in the United Arab Emirates? This question was answered by designing the course based on the Osborne model. The second research question was on the effects of teaching a course on morphology based on the Osborne model. To find the effect of teaching rhetoric lessons based on the Osborne model in the development of morphological concepts for the sample, the hypothesis was 'After taking the tests on educational achievement, there is no statistically significant difference between the average scores of the test group and the scores of the control group'. To test this hypothesis, the researchers calculated mean, standard deviation, and *t*-tests for the two independent samples of scores of students in the test and control groups. It was found that these differences were

statistically meaningful for the test group. Accordingly, the previous null hypothesis was rejected, and the results are shown in Table 4.

Table 4. Differences between Test and Control Groups for the Post-Test on Developing the Morphological Concepts

Group	Number	Average	Standard deviation	Degree of freedom	*t*-value	Sig.
Test	32	83.65	7.49	60	14.17	Not significant
Control	30	48.63	3.32			

Based on Table 4, there is a statistically significant difference between the average scores of the students in the test group and the control group and the *t*-post-test (14.17). This value is statistically significant at the 0.01 level and the degree of freedom is 60 (2.13). This difference is better for students of the test group who studied the morphology course based on the Osborne model. Based on the data in Table 4, there are differences between the mean of the control group, before and after the implementation. These differences stem from the influence of the usual method of teaching concepts in morphology. The first average and the post-test average were 48.63 and 69.82, respectively, and the obtained differences stem from the usual teaching method for lexical applications. For the test group, the first average and the post-test average were 49.34 and 83.65, respectively, and the obtained differences stem from the usual teaching method of lexical applications. The obtained differences stem from using the Osborne model in the development of morphological concepts. The differences are higher compared to the differences obtained with the usual teaching method and this confirms the effectiveness of this model in developing morphological concepts and increasing knowledge among students.

4.1 Measuring the Effectiveness

To show the effect of using the Osborne model in teaching the morphology course, we used the Carl equation to measure the size of the effect, as shown in Table 5.

Table 5. Size of the Effect of Using the Osborne Model on the Knowledge of the Test Group

Group	Number	Average	Standard deviation	Degree of freedom	*t*-value	Sig.
Test	32	83.65	7.49	60	0.89	Not significant
Control	30	69.82	6.13			

Based on Table 5 and according to the Carl equation, the effect size is 89%, which is statistically significant at a high level, i.e., if the effect size is higher than 80%, then the effectiveness is high. Therefore, this is a positive index regarding the usage of the Osborne model, and the model had a significant impact on the development of morphological concepts among the students of the test group.

According to these results, the statistical significance and measurement of the effect, we showed the effectiveness of the course on the development of the morphological concepts in the test group. These results are consistent with those of Othman and Abdulahi (2012), who attempted to identify the effect of teaching based on the Osborne model on the metacognitive skills of female students in the fourth grade regarding creative problem-solving. The results indicated that the students in the test group performed better than students in the control because the averages of the test and control groups were 30.632 and 24.650, respectively. The *t*-value and the effectiveness were 2.371 and 65.2, respectively. The differences between this research and the current one may be because of the difference in the dependent variable; that is, the former study required higher computation compared to the current research. Our findings align with prior research, such as that conducted by Al-Abidine Shahbaz (2017), which investigated the impact of the Osborne model on the comprehension of Islamic principles among second-grade high school students. The average of the test group was 30.82 and control group 25.14, while the calculated *t*-value was 5.46 and the significance level 5%. The current study is also consistent with Al-Shajiri and Valrawi (2018), which identified the effect of the Osborne model on the educational progress of second-grade high school students of Islamic education and measured their attitude towards it. This is because the average of the test and control groups and the calculated value of *t* and the effectiveness based on Kohler's coefficient were 31.419, 23.838, 6.061, and 1.563, respectively. The current research is also consistent with Al-Khattab and Al-Khawalada (2020), which identified the effects of a computer educational program based on the Osborne model for creative thinking to solve problems in the progress of tenth-grade students; the average of the control group was 60.73 compared to the 66.61 in the test group and the effectiveness was 0.314. Our research is also consistent with that of Al-Saeedin et al. (2021), who used the Osborne model in teaching

geography to female students in the seventh grade. According to this study, it was observed that the effectiveness of the Osborne model was different based on the function variable and the grade of the students.

5. Recommendations

Following the presentation and interpretation of our research findings, we offer the following recommendations: Firstly, we suggest testing the efficacy of the Osborne model in fostering morphological concepts among male students across various grade level. Secondly, we advocate for conducting equivalence tests between the Osborne model and alternative teaching strategies, incorporating different variables to gauge effectiveness. Thirdly, we propose that educators consider integrating the Osborne model into certain stages of their courses. Fourthly, we recommend incorporating select steps from the Osborne model into Arabic language instruction, particularly at a general level. Lastly, we encourage the implementation of the Osborne model to cultivate critical thinking, creative thinking, and problem-solving skills across different educational levels.

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