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The Efficiency of Using the 'Learning Cycle' Strategy in Acquiring Arabic Grammatical Concepts: A Study Applied to Grade-Nine Students in Jordan

(Kecekapan Penggunaan Strategi Kitaran Pembelajaran dalam Memperoleh Konsep Tatabahasa Bahasa Arab: Satu Kajian dalam Kalangan Pelajar Gred 9 di Jordan)

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ABSTRACT

Applied to grade 9 students in Jordan, this study aimed at examining the efficiency of using the 'learning cycle' strategy in acquiring Arabic grammatical concepts. A sample of 124 students was approved, which was distributed over two schools (boys and girls) and in two groups. The experimental group was taught the subject instructional material through the learning cycle strategy with 29 males and 35 females, whereas the control group was taught through the same material through the traditional program with 32 males and 28 females. In terms of findings, there were found statistically significant differences in the subjects' achievement in acquiring Arabic grammatical concepts, in favor of the experimental group. Statistically significant differences were also found due to gender in favor of females. Whereas no statistically significant differences were found due to the interaction between group/teaching strategy and gender.

Keywords: Learning cycle; grammatical concepts; grade 9 students; Arabic language

ABSTRAK

Kajian ini bertujuan untuk memeriksa kecekapan menggunakan strategi 'kitaran pembelajaran' dalam memperoleh konsep tatabahasa Arab yang digunakan untuk pelajar gred 9 di Jordan. Seramai 124 orang pelajar (lelaki dan perempuan) telah dijadikan sampel kajian. Soal selidik telah diedarkan di dua sekolah dan dibahagikan dalam dua kumpulan. Kumpulan eksperimen diajar bahan pengajaran subjek melalui strategi kitaran pembelajaran yang terdiri daripada 29 orang pelajar lelaki dan 35 orang pelajar perempuan. Manakala kumpulan kawalan diajar melalui bahan yang sama melalui kaedah tradisional dengan 32 orang pelajar lelaki dan 28 orang pelajar perempuan. Dapatan kajian menunjukkan bahawa terdapat perbezaan statistik yang signifikan dalam pencapaian mata pelajaran dalam memperoleh konsep tatabahasa Arab yang memihak kepada kumpulan eksperimen. Terdapat juga perbezaan yang signifikan dari segi jantina di mana dapatan memihak kepada wanita. Manakala tidak terdapat perbezaan yang signifikan secara statistik antara faktor interaksi dengan strategi pengajaran bagi kumpulan dan jantina.

Kata kunci: Kitaran pembelajaran; konsep tatabahasa; pelajar gred 9; bahasa Arab

Introduction

More teaching strategies require today broad, various and advanced horizons. Our students need help to enrich their knowledge, develop their mental skills and be trained on creation and production. This will not become real unless such students are given an opportunity to develop and perform their own ideas, by providing them with suitable resources and inspiring their thought. This all requires in fact directed programs and various methods and strategies of teaching.

Recently, more attention has been paid to 'concepts'. Educators and those concerned with education in general are today more interested in such concepts, which represent, as one unit herein, one of the most important aspects of education. Some studies have thus been conducted, aiming at identifying the concepts students should learn along with how they are to be formed and developed. As such concepts are important in education, educators have become more concerned in looking for methods and strategies, which may help teach such concepts better in all subjects and at all stages (Adwan & Hawamdeh 2008).

To form and develop a student's concepts in a meaningful manner is an important goal of teaching in various educational stages. It is also one of the basic requirements for understanding all disciplines of knowledge, which is organized in turn of certain theories and principles. Therefore, an appropriate teaching technique is required herein, which will ensure such concepts are secured and retained (Novak & Gowin 1986).

More specifically, concepts are a significant component of the Arabic content. Their being formed and developed is one of their teaching goals. Arabic teachers are thus required to recognize how to teach the Arabic concepts

and what methods needed to teach, in particular, the Arabic grammatical concepts. Learning 'grammatical concepts' of a language is certainly of high importance in learning that given language. To study the cognitive concepts of a grammatical topic, a student should begin with explaining the basic concepts, and thus he/she can acquire that language's structures and be capable of employing them well.

In this respect, the Constructivist Theory appears as one of the most effective theories of education today. This theory came herein to create in general a state of agreement with man's mental physiology and to present in particular 'learning' as a process of construction. Constructivism is a philosophical stand, mainly concerned with human learning and mind-building of learners (Prawat & Folden 1994). Knowledge as per this Theory cannot be received indolently; a learner should build this knowledge with his/her efficient understanding of the given aspect. Thus, ideas are not provided to students, but students are to build up their concepts by themselves and thus knowledge is generated to them by their self-based thinking and self-based working (Wheatley 1991).

FIGURE 1. Knowledge-building process as per the constructivist theory

Constructivism is based on knowledge-building and constructive operations (Watts and Bentley 1991), It takes, as of its grounds, innovative realism and self-based judgment in terms of understanding knowledge and total view in terms of the social context within which an individual's concepts are formed and developed (see Figure 1: Knowledge-Building Process).

The Constructivist Theory has been also of so important contributions in education, which Zaitoun and Zaitoun (2003) ascribed to the large interest paid to learners' previous knowledge including their experiences, beliefs, attitudes and concepts. It also emphasized group work including negotiation and involvement, using multiple representations of concepts and developing teaching models based on learners' situational environment. Thus, transition from traditional teaching to constructive teaching requires a change of the educational components (Fahmi & Sabour 2001; Walsh 1997), and this is described as follows (Table 1):

In this respect, Piaget's Model in mental growth is considered one of the most prominent cognitive theories. This Model's educational applications have largely influenced teaching methods, and the 'learning-cycle' strategy is one of such afore-said applications. It is worth mentioning herein that this strategy was developed and used in light of the Science Curriculum Improvement Study

TABLE 1. Transition from traditional teaching to constructive teaching

Traditional Teaching	Constructive Teaching
Knowledge exists outside learners and is teacher-centered.	Knowledge exists inside learners and is learner-centered.
Learners are of negative roles in receiving information.	Learners are of positive roles in receiving information.
Learning is of a competitive atmosphere.	Learning is of a cooperative atmosphere.
Teachers accept only learners' right answers.	Teachers accept both right and wrong answers.
Knowledge-remembrance.	Concept-alteration.
Learners depend on textbook as a good source of knowledge.	Learners depend on several various sources of knowledge.

(SCTS) project, which was conducted by the University of California in the United States.

Described by Renner et al. (2006) as a well established inductive approach to learning 'language', the learning cycle was formulated by Atkins and Karplus (1962) during the development of the SCIS in the early 1960's. As a curriculum framework, it was designed after the mental functioning model developed by Piaget, and provides experiences from which learners can construct meaning.

The literature contains several studies stating the learning cycle's benefits on student attitude and academic achievement. The learning cycle is a modern teaching method, which insists on the interaction between teachers and learners in a way the latter can acquire difficult concepts (Abraham & Renner 1986) and the former can plan and organize their teaching more efficiently (Blank 2000). It is also seen herein as one of the constructivist strategies, which insists on students' role in learning (Odom & Kelly 1999).

In terms of models and stages, Sunal (2003) gives twelve models of the learning cycle, each with a certain number of stages. The present study herein below provided, and also used, in light of the afore-said study and the related literature, three major stages of the learning cycle:

1. Stage 1 (Concept Exploration): Students learn herein new ideas through in-class works and interactions. They are to be exposed to questions and mental contradictions in facing unusual situations or new problems, where their role is to explore suitable tools, collect data and register their own information (Louis and Settlage 1996).
2. Stage 2 (Concept Introduction): Students get herein exposed to new concepts directly related to the topics explored in Stage 1. Such concepts can be presented by the teacher or the textbook or even by any audio-visual aids in an inventing or explaining manner. This Stage helps students to have a sort of self-organization,

which is in turn an important factor to affect their cognitive growth.

3. Stage 3 (Concept Application): Students apply herein the new concepts to new contexts in a wider range. This Stage is necessary so that meanings will be no longer limited to the examples given in Stage 2. This Stage helps students take more time to have that sort of self-organization of the concepts (Cavallo & Dunphy 2001; Walters & Sunal 1999; Patterson & Merwin 2002).

Of its main characteristics as seen by Khalili (1996), the learning cycle concerns itself with mental abilities. Learners are presented what they can learn in a research-wise manner from parts to whole. Moreover, the learning cycle drives learners to think; it is concerned with developing learners' thinking and critical thinking skills (Qadir 2006), which are certainly essential tools for any exploration.

The constructivist attitude in teaching language skills can be taken as a student-centered direction. Several good opportunities are provided herein for exploring ideas and building knowledge, based upon students' experience and how much this experience may help them perform their understanding and meaning-building operations (Smerdon & Burkam 1999).

Of note also is that this constructivist attitude is based on the notion of 'integration' and 'unity' among language skills. So, a state of integral employment is to be created for the phonological, morpho-syntactic and semantic systems of that language (Cairney 1995). The learning cycle, based on this constructivist notion, helps develop knowledge skills and academic achievement (Yatim 2008; Matthews 2000; Parker & Gerber 2000). It is of a role in developing both teachers' knowledge attitudes and learners' insistence toward work and innovation.

Problem

Recently, more interest has been paid in Jordan to improving and developing the educational process as a whole. Various methods are to be used in teaching and learning, and a transition is to be made from traditional teaching based on spoon-feeding to a new strategy by which learners are driven to exploration throughout various contexts and activities. Teachers are invited herein to adopt more effective teaching techniques, which will ensure that their learners' experiences and thinking skills are built and acquired, in a way the latter can understand the relationship between the new and old ideas and concepts. Therefore, constructivist teaching strategies are to be necessarily applied, by which learners can have more effective roles within the educational process.

The present study came thus to experiment a modern teaching method, which concerns itself with 'concept acquisition'. It examined the efficiency of using the learning cycle, in acquiring Arabic grammatical concepts for Grade-Nine students in Jordan, for the stages this strategy is based on in operating and organizing this sort of acquisition. It is deemed important to conduct this experiment, due to the lack of studies concerned with the impact of the learning-cycle strategy in acquiring Arabic grammatical concepts in Jordan.

Accordingly, the present study aimed at examining the efficiency of using the learning cycle in acquiring Arabic grammatical concepts for Grade-Nine students in Jordan, by answering whether there are statistically significant differences at $\alpha = 0.05$ in the subjects' mean scores in acquiring Arabic grammatical concepts due to both strategy and gender and besides the interaction between strategy and gender.

The present study is expected herein to: 1) attract the interest of the Arabic-language specialists, including curriculum designers and school supervisors, in exploring a certain method helping students create a sense of learning, and thus improve their achievement; 2) provide Arabic-language teachers with a clear definition of the learning-cycle strategy, which would help them improve and develop their teaching techniques at classrooms on a constant basis; 3) offer various choices to both supervisors and teacher-trainers to enrich their specific projects and programs; and 4) unveil a new gate in front of researchers and those of interest in teaching strategies, by which they would be of a highly appreciated role in conducting more research and experiments.

In this respect, the two below-stated terms are of high importance to be defined herein, as follows:

1. Learning cycle, which is a three-stage explorative strategy, combining both handwork and exploration in learning, and helps students build their own concepts and develop their conceptual structure. Such stages are: exploration, by which students learn through working on new items and ideas; introduction, by which students are exposed to new concepts related directly to the items explored in Stage 1; and application, by which students apply the new concepts to new contexts and situations.
2. Traditional method, which is It is a set of techniques produced by teachers for teaching grammatical concepts in Arabic for Grade-Nine students, as stated in the Teacher's Guide.

Questions of the Study:

1. Are there any statistically significant differences ($\alpha = 0.05$) between the Grade-Nine students who were instructed following the 'Learning Cycle' Strategy and those who were instructed following the traditional approach in terms of their acquisition of the grammatical concepts in the Arabic language?
2. Are there any statistically significant gender-related differences ($\alpha = 0.05$) among the Grade-Nine students who were instructed following the 'Learning Cycle' Strategy in terms of their acquisition of the

grammatical concepts in the Arabic language?

3. Is there any significant interaction ($\alpha = 0.05$) between Strategy (Learning Cycle vs. Traditional) and Gender among the Grade-Nine students in terms of their acquisition of the grammatical concepts in the Arabic language?

Methodology

Approach

The two-group experimental approach was adopted and actually used in the present study. This approach was of an aim to examine the efficiency of using the 'learning cycle' strategy in acquiring Arabic grammatical concepts for Grade-Nine students in Jordan. The study consisted of a subject sample of Grade-Nine students (males and females) for 2009/2010. Two public schools in Amman were selected, namely Jubaiha Basic School for Boys and Jubaiha Basic School for Girls. Two sections were randomly selected from each school; one was deemed as an experimental group and the other was of a control role (see Table 2).

TABLE 2. Distribution of subjects according to gender and strategy

Gender	Teaching Strategy		Total
	Experimental	Control	
Males	29	32	61
Females	35	28	63
Total	64	60	124

Instrument

In order to attain the present study's objectives, the following instruments were used:

Achievement Test An achievement test was prepared in order to assess the subjects' academic achievement in acquiring Arabic grammatical concepts. The test consisted in its final version of (25) multiple-choice items, with a maximum score of (50) points. Moreover, two items were omitted as their discrimination was less than (0.25).

Below is also a description of four procedural investigations applied to the test, in terms of validity, reliability, item-difficulty and item-discrimination, as follows:

1. The test was investigated by five referees, including professors at the Jordanian universities and Arabic supervisors and teachers. They were asked to read the test's various items and a) specify the items' wording and extent of appropriateness in relation of the present purpose; b) identify the items' extent of representation of the specified instructional material; and c) present any proper suggestions of item omission, addition or alteration.
2. The test was verified reliable by applying it to a pilot sample of (45) students. The reliability of the test was calculated as per Kuder-Richardson Formula 20 to be (0.86), which was a value accepted for the purpose of present study.
3. Applied to all the (25) items of the test, a percentage was produced for the subjects who answered a given item correctly. The test's item-difficulty ranged herein from 0.33 to 0.81, and this meant that the test's item-difficulty fell under the acceptable limits of difficulty coefficients.
4. Applied to all the (25) items of the test, the performance correlation on each item was calculated with the overall score obtained. The test's item-discrimination ranged herein from 0.25 to 0.77, and this meant that the items truly represent the learning ability of the test takers and they measure what the whole test measures.

Instructional Material

1. A unit from the Grade-Nine Arabic textbook was taken in order to examine the efficiency of using the learning-cycle strategy. This Unit 8 mainly addresses Arabic appositions such as adjectival qualifiers, conjunctions and appositives, in (10) classes.
2. A teacher's guide was prepared for the present purpose, consisting of ten courses, which were presented to a set of referees including subject teachers in order to make sure of this guide's validity.
3. The stages by which the above-said guide passed were as follows below:
   a. analyzing Unit 8's content, with its overall objectives identified and all major and minor concepts well-recognized;
   b. examining the activities included in Student's Book and Teacher's Guide and recognizing how they were suitable to the learning cycle's three stages, with a need to change some ones in a way or another;
   c. identifying the strategy's general steps and preparing a detailed map of its lessons and selected activities, where:
      i. the students were to do explorative activities in groups,
      ii. the teacher was to discuss with his/her students the meanings they had reached in the explorative stage in order to get ultimately a right definition of the given concept, and
      iii. other grammatical applications were to be selected and implemented in relation to various everyday phenomena.

Procedures

Listed below is the set of procedures, which were followed in order to implement the present study:

1. specifying the grammatical concepts to be taught by analyzing Unit 8 of the Grade-Nine Arabic textbook, including adjectival qualifiers, conjunctions and appositives;
2. preparing the achievement test and making sure of its both validity and reliability;
3. preparing plans of Unit 8's lessons 'Appositions' of Grade-Nine Arabic textbook as per the learning cycle strategy along with planning the audio-visual aids required for implementing the given activities and attempting the evaluation questions;
4. selecting from Grade-Nine a subject sample of this study;
5. applying the pre-test to the subject groups in order to recognize how equivalent they would be (and they were so according to the two-way ANOVA results);
6. implementing a one-month experiment in the amount of two-three classes a week regarding the grammatical concepts addressed in Unit 8 of the subject textbook;
7. applying the post-test to the subject groups just after the above-said experiment had been implemented; and
8. collecting and analyzing the data on the study's way to present its results and recommendations.

VARIABLES

The present study was based on the following two types of variables:

1. the independent variables, which were:
   a. Teaching strategy, with two levels (learning-cycle strategy and traditional method), and
   b. Gender, with two levels (males and females); and
2. The dependent variable, which was herein the interaction between the two above-said independent variables, i.e. the subjects acquiring Arabic grammatical concepts.

RESULTS

In light of and response to the present study's purpose and questions, this section of the study addresses below both pre-test and post-test results in terms of equivalency and findings respectively, whereas the former is just a pre-requisite of the latter.

PRE-TEST: EQUIVALENCY

In order to recognize the equivalency of the subject groups in acquiring Arabic grammatical concepts before treatment, the pre-test was applied to the subjects. The means and standard deviations were calculated, as follows:

TABLE 3. Means and SDs of students' pre-test scores

Group	Gender	N	Mean	Standard deviation
Control	Male	32	34.91	2.31
	Female	28	35.31	2.38
	Total	60	35.10	2.33
Experimental	Male	29	35.32	2.80
	Female	35	35.51	2.33
	Total	64	35.43	2.54

It is obvious in Table 3 above that there were slight differences in the subjects' mean scores at the pre-test according to both gender and strategy. In order to know the statistical significance of such differences, a two-way ANOVA analysis was used in Table 4 below.

TABLE 4. Two-way ANOVA of subjects' pre-test mean scores

Source	Sum of Squares	df	Mean of Squares	F-Value	Sig.
Strategy	3.060	1	3.060	0.508	0.477
Gender	2.821	1	2.821	0.468	0.495
Strategy*Gender	0.350	1	0.350	0.058	0.810
Error	764.960	127	6.023		
Total	771.191	130			

It is obvious in Table 4 above that there were no statistically significant differences at $\alpha = 0.05$ in the subjects' scores due to strategy nor gender. This indicates herein that the two groups were equivalent in acquiring Arabic grammatical concepts.

POST-TEST: FINDINGS

In light of the present study's purpose, the means and standard deviations were calculated for the subjects' post-test scores in acquiring Arabic grammatical concepts taking into account both strategy and gender, as shown in Table 5 below.

TABLE 5. Means and SDs of students' post-test scores

Group	Gender	N	Mean	Standard deviation
Control	Male	32	38.32	2.04
	Female	28	40.45	2.50
	Total	60	39.30	2.49
Experimental	Male	29	42.39	3.09
	Female	35	42.78	2.62
	Total	64	42.60	2.83
Total	Male	61	40.26	3.29
	Female	63	41.76	2.80
	Total	124	41.02	3.13

It is obvious in Table 5 that there were slight differences in the subjects' mean scores at the post-test according to both gender and strategy. In order to know the statistical significance of such differences, a two-way ANOVA analysis was used in Table 6 below.

TABLE 6. Two-way ANOVA of subjects' post-test mean scores

Source	Sum of Squares	df	Mean of Squares	F-Value	Sig.
Strategy	332.426	1	332.426	49.889	0.000*
Gender	51.613	1	51.613	7.746	0.006*
Strategy*Gender	24.243	1	24.243	3.638	0.059
Error	846.239	127	6.663		
Total	1254.520	130			

*Significant P<0.05

It is obvious in Table 6 above, in terms of the two independent variables, that statistically significant differences existed at $\alpha = 0.05$ in the subjects' post-test scores in acquiring Arabic grammatical concepts due to: a) strategy in favor of the experimental groups, which was taught by the learning cycle, with $F = 49.889$ at a level of significance of 0.000 and a mean of 42.60 versus 39.30 for the control group taught by the traditional method; and b) gender in favor of the females, with $F = 7.746$ at a level of significance of 0.006 and a mean of 71.76 versus 40.26 for the male students.

In terms of the dependent variable, however, no statistically significant differences existed at $\alpha = 0.05$ in the subjects' post-test scores in acquiring Arabic grammatical concepts due to the interaction between strategy and gender, with $F = 3.638$ at a level of significance of 0.059.

Discussion

To end with, there were statistically significant differences in the subjects' post-test scores in acquiring Arabic grammatical concepts due to the two independent variables of this study (i.e. strategy in favor of the experimental groups taught by the learning cycle and to gender in favor of female students). Such findings came in line with several studies applied to mostly similar aspects (Yatim 2008; Qadir 2006; Matthews 2000; Parker & Gerber 2000).

Set of indications or say general conclusions based on the findings stated as:

1. The learning cycle is one of the constructivist models of teaching. It includes real activities, situations and problems which require solutions at all stages. Thus, it helps students learn well and respond more to their teacher's questions.
2. The learning cycle focuses on students' not teachers' effort. Students are herein required to be in charge of their learning and knowledge-building, whereas teachers will be responsible for providing an atmosphere of group-work in which ideas are discussed in real situations and original missions.
3. Students at this stage accept in nature all new and various things, for their belief that such things are present with enjoyment in learning, which thus leads to better outcomes of academic achievement.
4. An effective educational climate was observed through the students' in-class cooperation and group-work. Those of relatively low achievement were concerned in being involved in doing works and finding solutions at a level of harmony and consistency.
5. The learning cycle, thus with all stated above, provides students with better opportunities to learn freely more than the traditional method of teaching where the teacher is the center. In a learning-cycle class, students lean to search and explore and their teacher is mostly a source of information.
6. In terms of gender, females as seen during the implementation of this study were of more observance of school timings and in-class discipline than males. They enjoyed enthusiasm and compliance with school rules and instructions with allocating most of their day-time for studying and doing homework. This all can be said to be an essential reason behind the females having better post-test scores.

Recommendations

Based on its findings and indications in light of the related literature, the present study herein, recommends:

1. Teaching concepts in general and those of Arabic grammar according to modern ways and models by making practical training sessions for both teachers and supervisors;
2. Focusing on the learning/teaching strategies mainly concerned with student activities, and providing as well self-based learning experiences in Arabic textbooks;
3. Using and employing certain strategies, e.g. the learning cycle, to help maintain the impact of learning on students; and
6. Providing all materials and instruments required for cycle-learning-based teaching at the basic schools in Jordan.
7. Carrying out further research to investigate the use of the 'Learning Cycle' Strategy in teaching and developing other language skills, such as the creative reading or writing skills, for different grade levels.

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