Effect of Jigsaw Teaching Method on Upper-Basic Students' Achievement in Arabic Language in Ilorin, Nigeria

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Abstract
This study examined the effect of jigsaw teaching method on students' achievement in Arabic language in Upper Basic Schools in Ilorin west, Nigeria. A quasi-experimental design was adopted for the study. The sample consisted of 64 students drawn from two sampled upper basic schools in Ilorin West and Ilorin East Local Government Areas of Kwara State. The sampled schools were randomly assigned to treatment (28 students) and control (36 students) groups. Analysis of Covariance (ANOVA) was used to analyse the data collected. The findings showed that students taught using jigsaw method performed significantly better than their counterparts taught using the conventional method. Based on these findings, it was recommended, among others, that the school administrators should provide a comfortable and relaxed school environment, such that students can be free to execute tutorials and group discussions for themselves. Teachers of Arabic should expose their students to jigsaw method as this will give students an avenue to have intellectual discussions with one another.

Keywords: Arabic, Teaching, Jigsaw method, Student Achievement

Introduction

Learning is the act of acquiring new, or modifying and reinforcing existing knowledge, behaviours, skills, values or preferences and may involve synthesising different types of information. The ability to learn is possessed by humans, animals and some machines. Learning is not compulsory; it is contextual (James & Gardner, 1995). It does not happen all at once, but builds upon and is shaped by what we already know. To that end, learning may be viewed as a process, rather than a collective of factual and procedural knowledge. Learning produces

changes in an organism and the changes produced are relatively permanent (Wenger, 2009).

Learning methods refer to the view that different people learn information in different ways. In recent decades, the concept of learning methods has steadily gained influence. The study describes the intense interest and discussion that the concept of learning methods has elicited among senior secondary school students in Arabic Language. Moreover, the learning methods concept appears to have wide acceptance not only among students but also among parents and the general public. This acceptance is perhaps not surprising because the learning methods are actively promoted by vendors offering many different tests, assessment devices, and online technologies to help educators identify their students' learning styles and adapt their instructional approaches accordingly (Omrod, 2008).

Learning methods encompass a series of theories suggesting systematic differences in individuals' natural or habitual pattern of acquiring and processing information in learning situations. A core concept is that individuals differ in how they learn. The idea of individualised learning styles originated in the 1970s, and has greatly influenced education. (Gardner, 1995).

The Jigsaw technique is a method of organising classroom activity that makes students depend on one another to succeed. It breaks a class into groups and breaks assignments into pieces that the group assembles to complete the puzzle. Jigsaw, one of the cooperative learning techniques, is based on group dynamics and social interactions. It is one of the pure cooperative learning techniques (Sahin, 2010). This technique, including two different treatments with different small groups in order to help learning and improve cooperation between students, was first designed by Aronson in 1978 (Hedeen, 2003).

Jigsaw technique can enhance cooperative learning by making each student responsible for teaching some of the materials to the group. In this technique, students are members of two different groups, the "home group" and the "expert group." Initially, students meet in their home groups, and each member of the home group is assigned a portion of the material to learn as an "expert" (Slavin, 1991).

Jigsaw technique allows students to actively participate in learning process. By being constantly subjected to this method, they should feel more comfortable about their roles. Ways of evaluating the groups can enhance the effectiveness of the jigsaw technique by making each student have a sense of responsibility for their group's achievements (Lucas, 2000).

In Jigsaw technique, each student prepares a part of the assignment outside the classroom. Later they turn to their groups and peer-teach other members. Whereas all groups can take the same subject, different groups can take different parts of it as well. Groups are reorganised to teach the subject in turn (Grasha & Yangarber, 2000). Jigsaw technique supports cooperative learning by giving each student the responsibility to teach a part of the subject. In this technique, there are members of two different groups, 'home group' and 'expert group' (Doymus et al., 2004). Home groups separate from one another, just like the parts of a Jigsaw, and join the expert groups consisting of the members of home groups which were given the same part of the material. Afterwards, students in the expert groups discuss the subject to make sure they understood it completely. Later, students return to home groups in which they would teach the material to the rest of the group members (Colosi & Zales, 1998).

In the application of Jigsaw technique, students separate from their own groups and form new groups with the other students who are responsible for preparing the same subjects. These groups, called "groups of experts" try to make other students understand the subject; they make plans about how they can teach the subject to their friends, and prepare a report. Afterwards, they turn to their own groups and teach their subjects to them with the help of the reports they have prepared. After the students have discussed in their various groups, then teachers perform some activities with individuals, small groups or the whole class in order to unify students' learning. For instance, he/she can make one of the home groups or individual students make presentations in the classroom on their subjects. In the evaluation stage, the study is completed by making the evaluation proposed by the cooperative learning method (Simsek, 2007).

Today, there are various types of Jigsaw that teachers can use in their classrooms. Jigsaw I was developed by Aronson in 1978, Jigsaw II was developed by Slavin in 1987 and Jigsaw III was developed by Stahl in 1994. Jigsaw IV was recently developed by Halliday in 2004. Jigsaw I and Jigsaw II differ from each other only in that Jigsaw II allows group competition. The same is valid for Jigsaw III. However, Jigsaw III is different from Jigsaw I and II since the process in it is evaluated by forms. Jigsaw IV is different from Jigsaw I, II, and III in that some quizzes are given to students in order to check the learning in expert and home groups and the parts of the units which are not taught are added to the process of instruction again. In addition to these, Reverse Jigsaw was developed by Hedeen in 2003 and Subject Jigsaw was developed by Doymus in 2007.

Academic achievement is the outcome of education, the extent to which a student, teacher or institution has achieved their educational goals. Academic achievement is commonly measured by examinations or continuous assessment but there is no general agreement on how it is best tested or which aspects are most important. (Annie Ward et. al., 1996).

Students' academic achievement is monitored closely so as to identify early any student whose achievement is likely to lead to academic failure. The examinations used in measuring the academic achievement are used to provide academic guidance so as to maximise the chances of all students succeeding in various senior secondary school subjects. Individual differences in academic achievement have been linked to differences in intelligence and personality. Students with higher mental ability as demonstrated by Intelligence Quotient (IQ) tests and those who are higher in conscientiousness tend to achieve highly in academic settings.

Purpose of the Study

The following are the objectives of the study:

a. will there be any difference in the academic achievement of Arabic students taught with Jigsaw and those taught with conventional method.

b. will there be any difference in the academic achievement of male Arabic students taught with Jigsaw and their counterparts taught without Jigsaw.

Hypotheses

The following research hypotheses were tested:

Ho_1: There will be no significant difference in the academic achievement of Arabic students taught with the jigsaw method and those taught with conventional method.

Ho_2: There will be no significant difference in the academic achievement of Arabic male students taught with Jigsaw method and their counterparts taught with conventional method.

Methodology

This study was an experimental research design. A quasi-experimental design inform of the null-equivalent control group design was adopted for the study. The study resembles the pre-test – post-test control group design, only that the non-equivalent control group design does not involve random assignment of subjects to groups.

Table 1: Research Layout

Group	Pre-test	Treatment	Post-test
Experimental	O_1	X	O_2
Control	O_3		O_4

Key:

O_1 represent pre-test of experimental group

O_2 represent post-test of the experimental group

X represent treatment for experimental group

O_3 represent pre-test of the control group

O_4 represent post-test of the control group

Non treatment for control group.

Table 1 shows the experimental group and the control group. Subjects in the two groups were pre-tested on Arabic Language Achievement Test prepared by the researcher. The experimental group received the treatment using Jigsaw method while the control group was taught without the use of Jigsaw method

(conventional method). After the treatment all the groups were tested using a parallel version of questions for pre-test and post-test. The study used the following instruments to gather information from the subjects.

Arabic Language Achievement Test (ALPT): The researcher made use of Arabic language achievement test to determine the effect of Jigsaw method on the students' achievement in Arabic Language. Arabic Language Achievement Test (ALPT) is a multiple-choice objective test which contains 50 items with four options (A-D) constructed by the researcher and covered the aspects of Arabic Language, that is, topics selected for this study.

Teaching instruments for the two groups: Jigsaw method and conventional method. The study used teaching method as applicable for the two groups. The researcher personally taught the experimental group. Although the researcher used the normal Arabic Language teacher in the selected school for control group, he was retained to conform to the required skill needed to teach according to specification. This was to reduce the variation which might have existed among the teachers used in the study.

The scheme of work and lesson plan prepared by the researcher showed the area of Arabic Language curriculum, which the researcher selected for use in this study with the assistance of experts in test construction, Arabic Language educators, and Arabic Language teachers in the secondary schools were sought and through split-half method, the reliability co-efficient of 0.67 of the instrument (ALPT) was obtained using Pearson Product Moment Correlation Coefficient Statistics.

In this study, a sample of 64 upper basic students drawn from two secondary schools in Ilorin West, Kwara State participated in the study. The two schools were selected using Purposive Sampling techniques. The selected schools have 28 students for experimental group and 36 students for control group using jigsaw and conventional groups respectively.

The researcher visited the schools used and sought permission for the use of the schools from the appropriate authorities. The study covered a period of six weeks. During the first week, the

researcher personally administered the treatment on the experimental group. This is because exceptional permission was granted by the school for lesson to take the last two one and half hours on specified days and usually the last two periods. The control group teacher was given instructions to teach following the conventional method as stipulated in teaching instrument for the control group. During the week, first period, SLTSS was conducted to classify the students into groups based on scoring ability. The ALPT was administered on the subjects as pre-test at the second period. Treatment commenced and lasted for five weeks. The students in treatment group were taught with the aid of jigsaw, while those in control group were taught with the conventional method, after which both groups were exposed to the same post-test.

Results

Demographical Characteristics of the Respondents

This section describes personal information of the participants (Secondary School Students) using frequency count and percentage. Results are shown below:

Demographic of the Groups

Table 2: *Distribution of the Students Sampled Based on Gender*

Groups	Gender	Frequency (%)	Sub-Total (%)
Experimental Group *(*Jigsaw*)*	Male	15 (23.5%)	28 (43.8%)
	Female	13 (20.3%)	
Control Group (*Conventional Method*)	Male	16 (25.0%)	36 (56.2%)
	Female	20 (31.2%)	
Total			**64 (100.0%)**

Table 2, shows the demographic information of the groups (experimental group and control group). Out of 64 (100%) students sampled for this study, 28 (20.0%) of the respondents formed the experimental group (jigsaw) from which 15(23.5%) were males and 13 (20.3%) were females; while 36 (56.2%) of the respondents constituted the control group (conventional method) out of which 16 (25.0%) were males and 20 (31.2%) were females.

Answering of Research Questions

Research Question One: *What is the profile of students' achievement in Arabic Language?*

Table 3: Descriptive Statistics of Students' Achievement in Arabic Language (before and after the Treatment)

Groups		Mean	S.D.	Min	Max	Remark
Experimental (Think-Pair-Share)	Pre-test	8.90	4.41	24.00		Low
	Post-test	18.48	6.99	48.00	46.00	High
					72.00	
Control (Conventional Method)	Pre-test	8.09	3.79			Low
	Post-test	11.73	4.56	30.00	42.00	Fair
					68.00	
				46.00		

As revealed in Table 4, the achievement of students (both the experimental and control groups) in the post-test were higher than their achievements in the pre-test. In the post test, the achievement with the mean score (18.48) of students exposed to jigsaw in Arabic Language was high when compared to those exposed to the conventional method with the mean score (11.73) which was fair. Table 5 therefore shows the mean gain of the students in Arabic Language after the treatment.

Table 4: Mean Gain Scores of the Students in Arabic Language after the Treatment

Groups	Pre-test	Post-test	Mean Gain Scores
Experimental (Think-Pair-Share)	8.90	18.48	9.58
Control (Conventional Method)	8.09	11.73	3.64

As shown in Table 4, the students taught with jigsaw technique had the mean gain score 9.58 while students that learned with conventional method had the mean gains score 3.64.

Hypotheses Testing

Hypothesis One: *There is no significant effect of jigsaw on Secondary School Arabic Language students' achievement in Ilorin west*

Table 5: Analysis of Covariance Results of the Effect of Jigsaw on Secondary School Arabic Language Students' Achievement in Ilorin west

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	756.689[a]	2	378.344	168.384	.000
Intercept	1068.699	1	1068.699	475.631	.000
Pre-test	5.796	1	5.796	2.579	.113
Think-Pair-Share	747.000	1	747.000	332.457	.000
Error	137.061	61	2.247		
Total	14234.000	64			
Corrected Total	893.750	63			

a. R Squared = .847 (Adjusted R Squared = .842)

The result in Table 5 reveals that the F-value of 332.457 is obtained with a p-value of 0.000 computed at 0.05 alpha level. Since p-value (0.00) is less than alpha level (0.05), the null hypothesis one is rejected and thus, there is a statistically significant effect of jigsaw on Secondary School Arabic Language students' achievement in Ilorin west ($F_{(1, 61)} = 332.457$, $p<0.05$).

The Multiple Comparison Analysis is depicted in Table 6 to show where the difference lies (i.e., the effect of the treatment on Arabic Language students' achievement)

Table 6: Pairwise Comparisons Analysis Showing the Effect of the Treatment on Students' Achievement in Arabic Language

Treatment	Mean	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
Experimental (I)	18.48[a]	6.75*	.357	.000	2.331	3.742
Control (J)	11.73[a]	-6.75*	.357	.000	-3.742	-2.331
Grand Mean = 15.105						

* the mean difference is significant at 0.05 level

b. Adjustment for Multiple Comparisons: Bonferroni

As shown in Table 6, students in the experimental group that were exposed to jigsaw learning strategy had higher adjusted mean score of 18.48 than those in the control group that were exposed to conventional method with an adjusted mean score of 11.73. Thus, the effect of the jigsaw on students' achievement in Arabic Language is shown by the mean score difference 6.75.

Hypothesis Two: *There is no significant interaction effect of the jigsaw and gender on Secondary School Arabic Language students' achievement in Ilorin west*

Table 7: Analysis of Covariance Results Showing the Interaction Effect of Jigsaw and Gender on Secondary School Arabic Language Students' Achievement in Ilorin west

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3.540[a]	2	1.770	.842	.443
Intercept	652.968	1	652.968	310.539	.000
Pre-test	2.858	1	2.858	1.359	.255
Gender	.951	1	.951	.453	.507
Error	52.567	25	2.103		
Total	9455.000	28			
Corrected Total	56.107	27			

a. R Squared = .063 (Adjusted R Squared = -.012)

The result in Table 7 reveals that the F-value of 0.453 is obtained with a p-value of 0.507 computed at 0.05 alpha level. Since p-value (0.507) is greater than alpha level (0.05), the null hypothesis two is not rejected and thus, there is no statistically significant interaction effect of jigsaw and gender on Secondary School Arabic Language students' achievement in Ilorin west ($F_{(1, 25)} = 0.453$, $p>0.05$).

Discussion

The main focus of this study was to examine the effect of jigsaw method on the achievement of Senior Secondary School Students in Arabic Language. The finding of this study showed that there is a significant difference between the academic achievement of students taught with Jigsaw and those taught without Jigsaw method. This is because students

enjoy studying with their peers and due to this, their achievements increase. This assertion is in consonance with Johnson and Johnson (1999) and Ural (2008) who posited that structured cooperation is more effective than individual and competitive environments in learning and transferring concepts, principles and rules in assuring permanence in learning. Similarly, the study is in line with Bafile's (2008), Abdullahi, (2016) and Abdullahi and Musa (2023) who opined that since students are working in groups, no one have to sink or swim on their own; they have the help of their peers. In the same vein, Hanze and Berger (2007) discovered that Jigsaw had a more favourable view of the learning experience, stronger intrinsic motivation, greater interest in topics and more cognitive activation and involvement than using the conventional method in teaching.

It was also discovered that there was no statistically significant interaction effect of jigsaw and gender on Secondary School Arabic Language students' achievement in Ilorin west. Both male and female performed equally. This finding agrees with Eagly's (1987) who observed that males and females learn the appropriate behaviours and attitudes from the family and overall culture they grow up with, which may either affect or influence gender academic achievements generally. The implication of this is that both males and females may perform excellently well or worse depending on their background and culture.

Conclusion

This study assessed the effect of jigsaw teaching method on the students' achievement in Arabic Language. It has been observed that the students' achievement in Arabic Language is poor despite the importance of the subject as a means of interacting with the Arabs in particular or with the Arabic speakers in general and specifically the language of Islam. The major causes of the poor achievement is attributed to inappropriate teaching approaches, techniques and methods employed by Arabic teachers forgotten it's a foreign language. It is against this back drop that this study is conducted to investigate the effect of jigsaw method on the teaching and learning of Arabic Language.

This study has contributed to knowledge in the area of methods to be employed in the teaching of Arabic Language. It showed that students' exposure to jigsaw which provide room for interaction, enhance students' achievement in Arabic Language. In other words, the use of jigsaw method can improve the achievement of the students either male or female who have been observed to perform poorly in Arabic Language.

Recommendations

The following recommendations were made:

1. The school administrators should provide a comfortable and relaxed school environment, such that student can be free to execute tutorials and group discussions for themselves. They should also encourage the students to participate in intellectual discussions without intimidation.
2. Proper conduct and professional academic procedure should be maintained by the teacher in the class. However, teachers should give their students an avenue to have intellectual discussions with one another. More so, they should note that the students must be divided and mixed up to avoid disadvantaged group or perceived segregation.
3. Government should make available various forms of visual resources for teaching the subject so that instructional objectives of Arabic teaching in the upper basic schools can be achieved.
4. The curriculum planners are advised to infuse group oriented academic topics into the curriculum so that Jigsaw can become an academic culture of the students

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