Examining the Effectiveness of the Educational System of Massive Open Online Courses (MOOCs) On Teaching Arabic in Girl's High Schools of Ahvaz City

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تقييم فاعلية التعليم بطريقة المساق الهائل المفتوح عبر الانترنت (الموك) في تعليم اللغة العربية في مدارس الثانوية للبنات في مدينة الأهواز

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Abstract:
In the Internet world, due to being free and completely identical educational structure with real academic and institutional education, MOOCs have been one of the most massive online learning methods in the last four years. The popularity of MOOC is attributed to the media focusing on it and its related subjects being presented by the best schools and universities in the world. The present paper examined the impact of MOOCs on Arabic teaching in high schools of Ahvaz city. To this end, the quasi-experimental method was used by two experimental (30 individuals) and control (30 individuals) groups to examine three effectiveness aspects on comprehension and translation, grammar, and the total grade of the Arabic language. After holding three-month class in two traditional and MOOCs methods and one month after the ending of the class as follow-up, the result of the study showed that this method with significant level of P<0.05 did not have effect on the improvement of comprehension and translation skill of students but had significant positive influence on grammar skill of students; and finally, it had considering effect on the total grade of Arabic of female students of Ahvaz city.
Keywords: Educational System, Massive Open Online Courses (MOOCs), teaching Arabic, High Schools, Ahvaz

الملخص:
فی العالم الإفتراضي تُعد الطريقة مساق هائل مفتوح عبر الانترنت (او الطريقة بالموك) من أهم أساليب التعليم عالميا. ذلك لأنها تتناغم والأساليب التعليم الشائعة في معظم الجامعات والمعاهد العلمية هذا فضلا عن أنها بالمجّان. بما أن هذه الطريقة أصبحت موضع أهتمام وسائل الأعلام وأن معظم الجامعات المرموقة لجأت لأستخدام الطريقة الموک للتعليم. بلغت هذه الطريقة ذروتها بالشهرة. يتناول هذا البحث مدى تأثير أستخدام اسلوب التعليم بالموك لتعليم اللغة العربية في مدارس الثانوية في الأهواز. انتهجنا في هذه الدراسة الطريقة شبه التجريبية حيث انتقينا فريقين احدهما للاختبار(من۳۰شخصا) بالاسلوب الموک وفريق التحكّم ايضا(۳۰شخصا) بالاسلوب التقلیدی. يخضع كل من الفريقين للاختبار في ثلاثة مجالات منها: ۱.فهم النصوص الادبية وترجمتها ۲.الصرف والنحو ۳. معدل درجات المادة العربية . أسفر البحث عن نتايج مهمة و بعد مرور ثلاثة أشهر كمدة زمنية للتعليم بالأسلوب الموك و بعد شهر واحد من انتهاء الفصل الدراسي بالمتابعه اذ عثرنا على تأثير ايجابي و ملحوظ في تعليم الصرف والنحو وأنتعاش معدل الدرجات للمادة العربية عند الطالبات في المدارس الثانوية في الاهواز فی مستوی P<0/05. لكن لم يُسجَل تغير ملحوظ في فهم النصوص الادبية وترجمتها في التعليم بهذا الأسلوب.
الكلمات المفتاحية: النظام التعليمي ، دورات ضخمة مفتوحة على الإنترنت ، تدريس اللغة العربية ، المدارس الثانوية ، الأهواز

Abstract

Currently, information and communications technology and most importantly computer and Internet have led to the fundamental evolution in all stages of human's social and individual life. Incorporating information and communication technology into education have caused changes and evolutions (León-Urrutia et al. 2018). Changing roles, developing new responsibilities, and creating the successive changes originates from the effect of this technology in educational systems (Asefi et al. 2010). MOOCs have facilitated the online courses for anyone who has access to the Internet and is motivated enough to learn anywhere and at any time in the world (Jordan, 2014; Liyanagunawardena, Adams & Williams, 2013).

Online courses in higher education will play an important role in the future. Massive Open Online Courses (MOOC) are popular because of providing benefits for modern students and those in remote places (Wambugu, 2018). On the other hand, online education by MOOCs method had successful result of English teaching in Venezuela (Wolfe, 2015; Fowler, 2013). The advocators of MOOCs innovation believe that it can provide educational advantages to higher education institutions, professors, and students. For instance, some believe that MOOCs are the final democratization of education and it is possible by providing education for most of the people (Jacobs, 2013).

Another aspect of MOOCs is that there are remarkable advantages for open educational movement around the world. George Siemens (2015) stated that regarding future scenarios for MOOCs, global demand for accessing the education along with digitizing the teaching is what they provide. This is evident in other researches that MOOC provides opportunities for accessing the education. Some of the vital opportunities which MOOCs can provide potentially for educational movement are as following:

- Meet the requirements to more educational institute (Chao-Chen Chen, 2013, Tang & Churchill man, 2016).
- Supporting the literacy in Asian developing country (Chao-Chen Chen, 2013)
- Supporting the lifetime learning and developing worldview (Tang & Charlman, 2016)
- Reducing the accessible cost to the educations (Tang & Churchllman, 2016)

- Increasing the accessibility to higher education (Valejiorges & Carvalio, 2015)

Stephen Downs believes that "different individuals have various purposes for MOOCs and what we find in informal learning is generally that people succeed by informal learning because it allows them to do whatever they want (Bonk, 2015; Losh, 2017). According to the analysis of 11000 participants in the first MOOC of Duke University, researchers observed the various motivations of taking part in MOOC such as comprehension, exploring online education, experiencing online social interaction, entertaining and enjoying without particular waiting for completion or achievement (Blanger & Toronten, 2013). Keller, Enji, Dow, and Chen (2013) supported the same view about the motivation and intention of participants in MOOCs. The analysis of 17 first courses which was performed commonly by HarvardX and MITx in edX platform from fall 2017 to summer 2013; according to this analysis, the average percentage of participants who stopped their activity in the first week had the most amount of 50% and it was 16% in the second week. The more research report showed that 4% of participants studied half of the online content, investigated 55% of one-fourth of the online contents and 34.7% never involved in them (Ho et al., 2014).

Despite the argument between advocators and critics of MOOC, the current popular discourse in main media has created a spectacular bubble and desire to admit MOOCs (Haggard, 2013). Within this scope, the subjective analysis of related studies needs to be done for better understanding of MOOCs.

Statement of the Problem

Arabic language teaching methods are based on traditional methods and sometimes based on capabilities and creativities of related teachers, and the gender differences between girls and boys are ignored in learning the language. Furthermore, no technology-based learning method such as M-learning, e-learning, virtual teaching, Flipped Classroom or MOOC is used. On the other hand, two major discussion characteristic including comprehension and translation and grammar (rules and syntax) are considered in Arabic language teaching in Iran's high schools. Regarding the poor result of Arabic language learning in schools of Ahvaz city as the capital of Khuzestan province and the poor learning performance of students, MOOCs have been used for teaching Arabic to examine the

effect of this educational method on learning Arabic in girl's high schools of Ahvaz city.

Research Hypothesis

1. Arabic teaching by MOOC method had a significant influence on comprehension and translation skill, grammar skill, and a total grade of Arabic.
2. The influence of MOOC teaching method continues on comprehension and translation, grammar and the total grade of Arabic.

Statistical Population and Sample

The statistical population included all female juniors of arts in Ahvaz city in 2017-2018 academic years. With respect to the fact that sample size is recommended at least ٣٠individuals in two control and experimental groups in quasi-experimental designs (Delavar, 2007); therefore, 60 individuals was selected as sample population, of which 30 individuals were included randomly in the experimental group and 30 individuals in control group. In the current study, multi-stage random cluster sampling was used to collect data. Within this scope, first, region 1 was selected randomly among the regions of Ahvaz city; then, one school was selected randomly among high schools including several classes; thereafter, the third grade of high school students in the major of humanity were selected among the classes, of which one class was selected randomly as the experimental group and another one as a control group.

Research Method and Design

The research method was quasi-experimental type along with pretest-posttest and with the control group. First, of two selected classes as control and experimental group, a 20-grades Arabic test including comprehension and translation (13 grades) and grammar (7 grades) was given as pretest for each group under similar condition. The experimental group was taught by MOOC method for three months and two sessions of 1.5 hours per week, but the control group did not receive any interference and they were taught Arabic by the traditional method. After three months, a 20-grades Arabic test was given as posttest from every two groups; finally, in fourth month two groups were examined again to follow up the teachings.

Data Analysis by Descriptive Statistics

In this section of the research report, data were analyzed descriptively by using tables and diagrams. It should be asserted that SPSS 22 was used for providing the tables' contents.

Table1. Mean and Standard Deviation of "Comprehension and Translation" Grades in Control and Experimental Groups

Variable	Group membership	pretest		posttest		Follow-up	
		Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Comprehension and Translation	Control group	8.9	1.84	8.93	1.70	9	1.31
	Experimental group	8.83	1.80	9.07	1.31	9.17	1.23

According to the result indicated in Table 1, Arabic comprehension and translation of experimental and control groups in posttest and follow-up has not changed significantly than pretest.

Table2. Mean and Standard Deviation of "Grammar" Grades in Control and Experimental Groups

Variable	Group membership	pretest		posttest		Follow-up	
		Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Grammar	Control group	4.10	1.09	4.20	0.714	4.33	0.661
	Experimental group	4.03	0.85	5.33	0.785	5.67	0.802

According to the result presented in Table 2, grammar grade in the experimental group in posttest and follow-up has changed significantly than pretest while it has not changed significantly in the control group.

Table3. Mean and Standard Deviation of "Total Grade of Arabic" in Control and Experimental Groups

Variable	Group membership	Pretest		Posttest		Follow-up	
		Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
The total grade of Arabic	Control group	13	1.68	13.13	1.67	13.33	1.39
	Experimental group	12.87	1.83	14.40	1.56	14.83	1.53

According to the obtained results in table 3, the mean of Arabic grade in the experimental group in posttest and follow-up had significant change than pretest while it had not changed significantly in the control group. In the following, the diagram of each research components in two groups has been indicated in the pretest, posttest, and follow-up.

Diagram1. Mean of Comprehension and Translation for two experimental and control groups in pretest, posttest, and follow-up

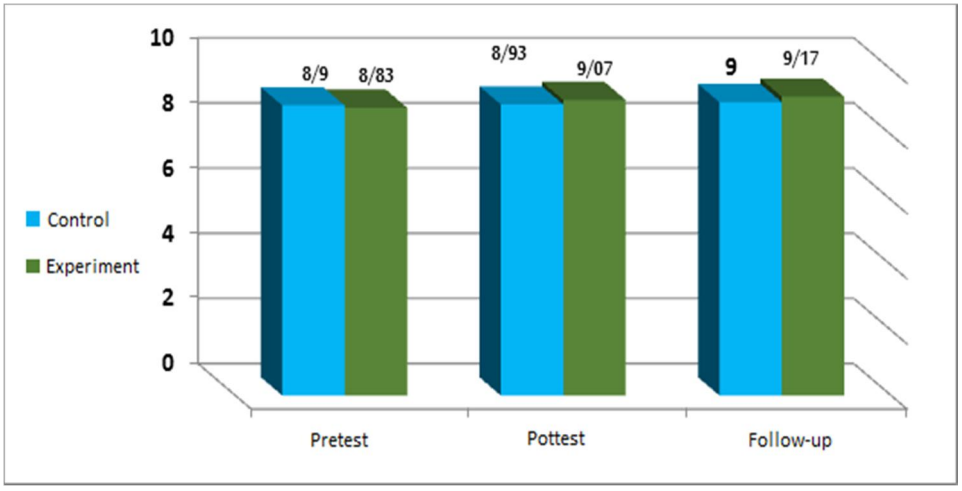


Diagram2. The Mean of Grammar Grades for Two Experimental and Control Groups in Pretest, Posttest, and Follow-up

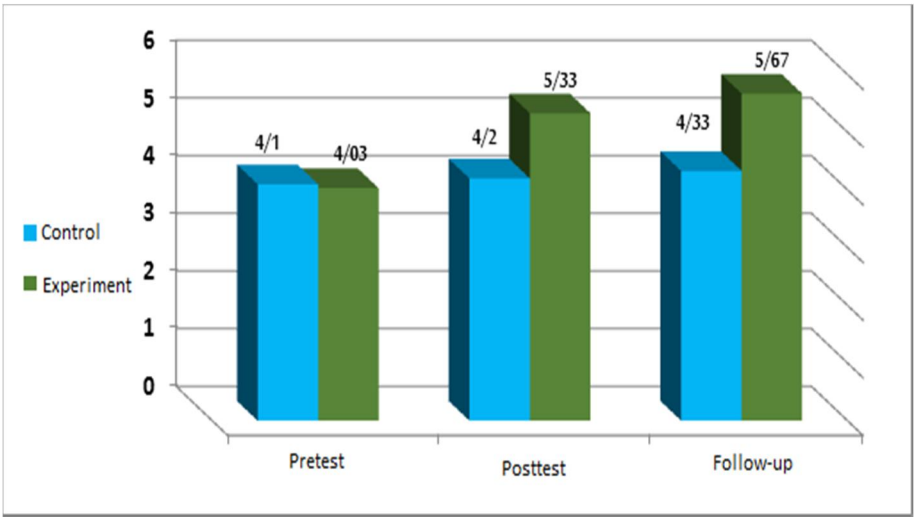
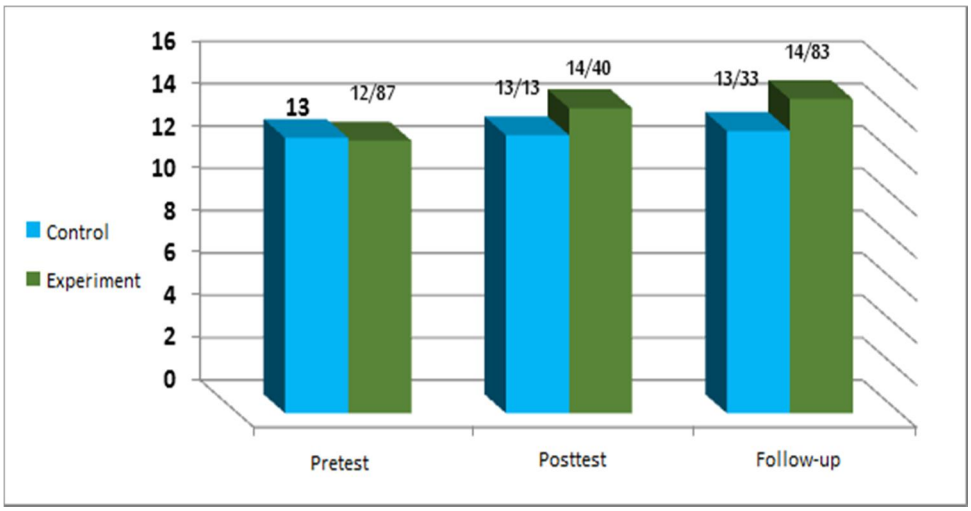


Diagram3. The Mean of Arabic Grade for Two Experimental and Control Groups in Pretest, Posttest, and Follow-up



Subsequently, the data related to research hypotheses have been analyzed; multivariable analysis of covariance test (MANCOVA) has been used for test hypotheses.

According to the present research design which is the pretest-posttest type, multivariable analysis of covariance was used to analyze the data and control the effect of pretest-posttest. In order to trust the result, the fundamental assumptions of analysis of covariance (linearity, multicolinearity, homogeneity) need to be considered in this analysis type.

Linearity

In this research, the pretest of comprehension and translation, grammar and Arabic grade were considered as covariate variable and their posttests as the dependent variable. The linearity relationship of each dependent variable and its covariate was analyzed. The coefficient of correlation or the relationship between pretest and posttest was obtained r=0.790 for comprehension and translation skill, r=0.318 for grammar skill, and r=0.584 for Arabic grade. Furthermore, the coefficient of correlation of pretest and follow-up was r=0.760 for comprehension and translation skill, r=0.329 for grammar skill, and r=0.541 for Arabic grade. The significant level of linearity relationship was obtained as $p<0.05$ in each three coefficients of correlation. According to the data obtained, there is linearity assumption for each three variables.

Multicolinearity

Multicolinearity is created when covariate variables have high correlation r=0.80 with each other, and in fact, the coefficient of correlation needs to be lower than 0.80. This important phenomenon should be prevented in multivariable analyses tests (Garson, 2012). In the current research, the pretests of comprehension and translation skill, grammar, Arabic grade were considered as covariate variables.

Table4. The Matrix of Correlation Coefficients between Covariates pretest

Variables	Comprehension and Translation	Grammar	Grade of Arabic
Comprehension and Translation	1		
Grammar	0.322	1	
Grade of Arabic	0.651	0.492	1

Table 4 indicates the correlation between pretests of comprehension and translation, grammar, and Arabic grade variables. According to the obtained correlations, it can be asserted that the multicolinearity assumption between covariate variables has been considered for all variables (the computed correlation coefficients is lower than 0.8). Therefore, the analysis of covariance is possible in terms of considering all assumptions.

Examining the homogeneity of variance-covariance matrixes is one of the assumptions of multivariable analysis of covariance which Box test has been used to this end. The result has been shown in Table 4-5.

Table5. The result of Box Test in terms of the Homogeneous Assumption of Variance-Covariance of Research Variables Grades of Two Groups in Population

Research Component	F	Box statistic	Significance level
	1.218	3.485	0.401

Table 5 showed that the values of F=1.218, Box, M=3.485, and P=0.401 were calculated regarding the homogeneous assumption of variance-covariance of grades of research variables of two groups in the sample population. The significant level of Box test is more than 0.05 in the above test; therefore, it can be concluded that the variance-covariance matrix has homogeneity.

Table6. The Result of Leven Test in terms of Variances Homogeneous Assumption of Components Grades of Two Groups in population

Variable	F	First freedom degree	Second freedom degree	Significance level
Comprehension and Translation	1.036	2	177	0.310
Grammar	0.335	2	177	0.563
Arabic Grade	0.637	2	177	0.426

According to table 6, it can be seen that comprehension and translation variable as F=0.563 and P=0.310, grammar value as F=0.335 and P=0.563, and Arabic grade variable as F=0.637 and P=0.426 are calculated. In all cases, the computed significant level for Leven test is more than the significant level of the current test (0.05), resulting in the homogeneity of variance.

Normality is another important assumption of research data. Kolmogorov–Smirnov test was used to investigate the normality of data distribution of the research. Zero assumption was chosen for data normality, and Kolmogorov–Smirnov test was used at the level of 5%. The result of this analysis has been presented in Table 7.

As it is observed, the significant level of the test is more than 0.5 for all research variables, confirming the data normality. Considering the Z value of Kolmogorov–Smirnov test is another method. If its value is lower than +1.96 and more than -1.96, it can be concluded with 95% certainty which there is no difference between observed and expected frequencies. In other words, the distribution of the population is normal. Therefore, by proving the normality, Pearson parametric test is used for examining the relationship between variables, and the parametric test is used for mean test and F test is employed in this research.

Table7. The Result of Kolmogorov–Smirnov Test in terms of Normal Distribution Assumption of Research Components Grades

Variable	Control group		Experimental group	
	Kolmogorov–Smirnov test		Kolmogorov–Smirnov test	
	Statistic	Significance	Statistic	Significance
Comprehension and Translation	0.660	0.776	0.774	0.587
Grammar	0.930	0.353	1.075	0.146
Grade of Arabic	0.913	0375	0.904	0.387

Investigating the Research Hypotheses

1. Arabic teaching by MOOC method had a significant influence on comprehension and translation skill, grammar skill, and a total grade of Arabic.

Table8. The Result of Multivariable Analysis of Covariance Test (MANCOVA) on Mean of Posttest Grades for Comprehension and Translation, Grammar Skills, and Total Grade of Arabic in Control and Experimental Groups with Pretest Control

Name of the Test	Value	DF hypothesis	DF error	F	Significance level (P)	Eta-squared (η^2)	Statistical power
Pillai's Trace Test	0.916	4	234	49.41	0.000	0.458	1
Wilk's lambda Test	0.138	4	232	98.33	0.000	0.629	1
Hotelling's Trace Test	5.87	4	230	168.95	0.000	0.746	1
Roy's Largest Root Test	5.81	2	117	339.87	0.000	0.853	1

According to the result of table 8, among the respondents of experimental and control groups with pretest control, the significant level of each tests such as Pillai's Trace, Wilk's lambda, Hotelling's Trace, Roy's Largest Root for multivariable analysis of covariance test (MANCOVA) on posttest mean grades of comprehension and translation skill, grammar skill, and total grade of Arabic is lower than 0.5.

Therefore, it can be concluded that the multivariable analysis of covariance test (MANCOVA) is generally significant. The analysis result showed that MOOC has a significant influence on comprehension and translation skill, grammar and total grade of Arabic.

In the following, univariate analysis of covariance test on MANCOVA text is employed on the mean of posttest grades of comprehension and translation skill, grammar skill and a total grade of Arabic among respondents of experimental and control groups with pretest control and the research hypotheses are investigated:

1.1. MOOC method has a significant influence on learning comprehension and translation of Arabic

2.2. MOOC method has a significant influence on learning grammar skill of Arabic.

3.1. MOOC method has a significant influence on the total grade of Arabic.

Table9. One-way Analysis of Covariance Test in MANCOVA Context on Posttest Mean of Grades for Comprehension and Translation, Grammar and Total Grade of Arabic in Control and Experimental Groups with Pretest Control

Dependent Variable	Changes Source	Sum of Squares	Degrees of Freedom	Mean Squares	F	Significance level (P)	Squares	Statistical power
Comprehension and Translation	pretest	947.49	2	473.74	169.55	0.000	0.637	1
	Group	0.033	1	0.033	0.012	0.913	0.00	0.051
	Error	326.9	117	2.79				
Grammar	Pretest	171.66	2	85.83	102.54	0.000	0.637	1
	Group	8.53	1	8.53	10.19	0.002	0.08	0.886
	Error	97.93	117	0.837				
Grade of Arabic	Pretest	1895.33	2	947.9	319.76	0.000	0.845	1
	Group	9.63	1	9.63	0.047	0.047	0.051	0.432
	Error	346.33	117	2.96				

table9 shows the result of multivariable analysis of covariance test (MANCOVA) for examining the mean difference of posttest for grades of comprehension and translation skill, grammar skill and a total grade of Arabic among the individuals of experimental and control groups with pretest control. According to result, the significant level of the test is lower than 0.05 for the difference of Arabic grade and Grammar grade in two control and experimental groups ($P<0.05$). Therefore, hypothesis 1 is rejected and hypotheses 1 and 2 are confirmed, and the MOOC learning method has a significant influence on grammar and total grade of Arabic. 2. The influence of MOOC teaching method continues on comprehension and translation, grammar and the total grade of Arabic.

Table10. Multivariable Analysis of Covariance Test (MANCOVA) on Follow-up Mean of Grades for Comprehension and Translation Skill, Grammar Skill and Total Grade of Arabic in Experimental and Control Groups with Pretest Control

Name of the Test	Value	DF hypothesis	DF error	F	Significance level (P)	Eta-squared (η^2)	Statistical power
Pillai's Trace Test	0.965	4	234	54.55	0.000	0.483	1
Wilk's lambda Test	0.127	4	232	104.93	0.000	0.644	1
Hotelling's Trace Test	6.168	4	230	177.32	0.000	0.755	1
Roy's Largest Root Test	6.048	2	117	354.8	0.000	0.858	1

Table 10 indicates that among the respondents of experimental and control groups with pretest control, the significance level associated with each of the tests including Pillai's Trace, Wilk's Lambda, Hotelling's Trace, and Roy's Largest Root for multivariable analysis of covariance (MANCOVA) on follow-up mean of grades for components grades like comprehension and translation skill, grammar skill, and total grade of Arabic has been lower than 0.05. Therefore, it can be concluded that there is a significant difference between follow-up mean scores of grades of comprehension and translation skill, grammar skill, and a total grade of Arabic in experimental and control groups.

Subsequently, by single-variable analysis of covariance in MANCOVA text on mean scores in follow-up stage, grades components of comprehension and translation skill, grammar skill, and a total grade of Arabic are examined among the respondents of experimental and control groups with pretest control and the research hypotheses are investigated:

1.1. MOOC method has a significant effect on comprehension and translation skill learning of Arabic

2.2. MOOC method has a significant effect on grammar skill learning of Arabic.

3.1. MOOC method has a significant effect on the total grade of Arabic.

Table11. The Result of One-way Analysis of Covariance in MANCOVA Context on Follow-up Mean of Grades for Comprehension and Translation Skill, Grammar Skill, and Total Grade of Arabic in Experimental and Control Groups with Pretest Control

Dependent Variable	Changes Source	Sum of Squares	Degrees of Freedom	Mean Squares	F	Significance level (P)	Squares	Statistical power
Comprehension and Translation	pretest	951.92	2	475.96	193.73	0.000	0.768	1
	Group	0.075	1	0.075	0.031	0.862	0.0001	0.053
	Error	287.44	117	2.457				
Grammar	Pretest	180.2	2	90.108	103.66	0.000	0.639	1
	Group	12.03	1	12.03	13.84	0.000	0.106	0.958
	Error	101.70	117	0.869				
Grade of Arabic	Pretest	1909.6	2	954.8	344.47	0.000	0.855	1
	Group	14.008	1	14.008	5.054	0.026	0.041	0.606
	Error	324.3	117	2.77				

Table 11-4 shows the result of multivariable analysis of covariance in (MANCOVA) for examining the follow-up mean difference of grades for comprehension and translation skill, grammar skill, and a total grade of Arabic among the individuals of experimental and control groups with pretest control. According to the result, the significance level has been lower than 0.05 for the difference of grammar grade and Arabic grade in two experimental and control groups for follow-up ($P<0.05$). Therefore, hypothesis 1 is rejected and hypotheses 2 and 3 are confirmed; therefore, MOOC teaching method has a permanent effect on grammar grade and the total grade of Arabic.

Discussion and Conclusion

As it was mentioned, MOOC has been taken into account as an effective technological method in the modern world. However, it is sometimes confirmed or rejected by special academic groups based on its characteristics. Generally, it can be claimed that if MOOCs are nothing, they are only as another source for learning.

On the other hand, the conducted examinations by this research indicate that MOOC generally has a significant influence on Arabic teaching although this is related only to the comprehension of Arabic. However, this influence was significant and has observed in the students' total grade of Arabic. Therefore, the researchers recommend that MOOC needs to be used to teach Arabic grammar in a bigger communities and as a complementary method for common teaching in schools.

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