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A Comparison Between the Effect of two Methods of  
Evaluation Upon the Achievement of Graduate  
Students in Statistics

BY

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Introduction:

The aim of this study was to compare the effect of two evaluation methods upon the achievement of students in statistics. In the first method, students were given in-class assignment then a short quiz of (2-3) questions in the last 25 minutes of each class meeting of 90 minutes. The students, evaluated using the second method, were given four major in-class assignments of (10-12) short questions, and two major tests during the first fifteenth week of the semester. Each in-class assignment was given after having a new chapter. The two major tests were given in the fifth and the eleventh week consecutively. The students, evaluated using the second method, were the control group, and the students evaluated using the first method, were the experimental group. The researcher employed the two methods over the fall semester of 1988 at Mutah University in Jordan. In the first class meeting the students in the experimental and the control group were given a pre-test in statistics, and no statistical differences were found between their means, while on the post-test which was given on the last week of the semester, it was found a statistical difference between their means in favor of the experimental group.

Previous studies have indicated that we can motivate students to study and help them to consolidate in memory what has been learned, and the time spent on testing is more advantageous

for retention than is study or review (Nungester & Duchastel, 1982).

The results of the study by Dineen & Stephens (1989) showed that students given daily quizzes improved much better than students given short weekly tests, but there is no statistical difference between their achievement. In the second study by Stephens (1987) the result revealed that the students given daily quizzes for four consecutive days and tested the fifth day significantly exceeded students who were tested each fifth day only.

Yamin (1989) examined the effect of frequent versus conventional testing on chemistry achievement, test anxiety and attitude toward science. Conventional testing was defined as a midterm and final examination. The results of the study showed significant differences between the control and experimental group. Students in the experimental group had higher achievement scores in chemistry, and lower anxiety scores than students in the control group. Also, the result revealed that there were no significant differences between groups for attitudes toward science.

Strawitz (1989) in another study on periodic testing, examined the achievement of students in a self-instructional process-oriented science method course. One group of students was given weekly quizzes on the process skills assigned each week. The second group of students was instructed to learn the process skills and was given an assessment at the end of the

course. The results indicated that there was no significant difference in process skill acquisition between the two groups.

As instructor of statistics for five years, the researcher feels that many of the students do not like to study statistics, but they are forced to take it because it is an obligatory course. Therefore the researcher tries to experiment a new strategy in evaluating (Method 1) by giving an in-class assignment and a quiz in each class meeting. This new method may help the students to perform much better than in Method 2. In addition we noticed from the previous studies the inconsistent of the effect of testing, so the researcher hopes that the results of this study will shed more light on the effect of testing upon the student achievement.

#### Methodology

##### The sample:

The sample included the students enrolled in a statistics course offered in fall semester of 1988 in the Education Department at Mutah University. This is a graduate core course for all students enrolled in the program General Diploma in Education. The program is mainly for in-service teachers. In-service teachers in this hold bachelor degree. In addition, the students of the sample study were from the same economic background.

The sample of the study consists from 44 students enrolled in two classes. One of the classes includes 25 students and randomly assigned as an experiential group, the other class includes 19 students and randomly as a control group.

Procedure:

In the first class meeting of the semester, the 44 students were given a pre-test in statistics, and in the last week of the semester all the studies were given a final achievement test in statistics (post-achievement test). These two tests are parallel and have been developed by the researcher. Each test has 42-multiple choice test. The reliability coefficient of both tests were calculated using Kuder-Richardson(20) and it was found (.87) for the pre-test and (.84) for the post-test, and the content validity of both tests were checked by six instructors of statistics from Mutah University.

The Results:

The E-test was used to examine the difference between the means of the scores of the experimental and control group. On the pre-test, the E-test showed no significant difference, and the F-test showed that the two groups were homogenous (calculated  $F=1.35$ ,  $F(24,18)=2.03$ ,  $p<.05$ ). The result is shown in Table 1.

Table 1. Means Standard Deviation for the Scores on the Pre-test

Group	N	Mean	Standard Deviation	Computed T Value
Experimental	25	25.5	6.35	0.47
Control	19	24.6	5.96	

The t-test also was used to test the difference between the means of the experimental and control groups on the post achievement test. A significant difference was found in favor of the experimental group. The result is shown in Table 2.

Table 2. The Means Standard Deviation for the Scores on the Post-achievement Test.

Group	N	Mean	Standard Deviation	Computed T Value
Experimental	25	72.92	3.91	3.58
Control	19	68.42	4.41	

$p < .05$

Discussion:

The result revealed that there was a significant difference between the means of the scores of the experimental group and the control group in favor of the experimental group.

This means that frequent quizzes improve the student achievement in statistics. This is may be explained that frequent testing and assignment motivate students to study and learn and at the same time help them to consolidate in memory what has been learned (Kulik, Jask & Kulik, 1978; Dustin, 1971). The result of this study is consistent with the results of (Yamin, 1989; Stephens, 1987), and inconsistent with the results of (Strawitz, 1989; Stonard & Dolphin, 1981).

The result of this study stresses the importance of the frequency of both the quizzes and the in-class assignments, and its also very important for instructor of statistics. It gives them a new method for evaluating a non-motivated students with respect to studying statistics.

The researcher recommends to investigate the interaction effect of frequent testing and other factors that influence the achievement like the stream of teaching (scientific or humanity) and anxiety level for the students.



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اعداد

الدكتور عبدالله عابنسة \*

هدفت الدراسة الى مقارنة أثر طريقتين في التقويم على تحصيل طلبة الدبلوم في مادة الاحصاء التربوي : وتتمثل طريقة التقويم الاولى - في تقديم مجموعة من التدريبات يقوم الطلبة على حلها ثم امتحان قصير - ويتم هذا التقويم في نهاية كل محاضرة . أما في طريقة التقويم الثانية ، فتقدم التدريبات في نهاية كل وحدة دراسية - أي بواقع أربعة مجموعات من التدريبات خلال الفصل الدراسي والذي استمر ( ١٦ ) أسبوعا ، ثم تقدم الطلبة الى امتحانين رئيسيين خلال الاسبوع الخامس والحادي عشر على التوالي .

ولقد شملت عينة الدراسة جميع الطلبة المسجلين في مادة " الاحصاء التربوي " للفصل الدراسي الاول لعام ١٩٨٨ في جامعة مؤتة والبالغ عددهم ( ٤٤ ) طالبا وطالبة موزعين على شعبتين احدهما شملت ( ٢٥ ) طالبا وطالبة ، والثانية على ( ١٩ ) طالبا وطالبة . ولقد تم عشوائيا تحديد المجموعة الاولى كمجموعة تجريبية تم تقويم تحصيل الطلبة فيها بالطريقة الاولى ، والمجموعة الثانية كمجموعة ضابطة ، تم تقويم تحصيل الطلبة فيها بالطريقة الثانية ، ولقد استمرت التجربة لمدة فصل دراسي كامل - أي بواقع ( ١٦ ) أسبوعا .

ولقد دلت نتائج اختبارات على أن هناك فروقا ذات دلالة احصائية بين متوسطات اداء المجموعتين ولصالح المجموعة التجريبية .

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