The Impact of Kindergarten Teachers' Training on Students' Performance

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Abstract

The purpose of this study is to investigate the effect of training kindergarten teachers on KG2 students' achievement in Math in Al Rabahiya el Janubiya school, Iraq el Ameer secondary school, Um Abharah secondary school and German secondary school Wadi el Sir Directorate of Education in Jordan. To achieve the purpose of the study, a pre/post-test was constructed to measure students' level in Math. The test consisted of thirty items on Mathematics. The sample of the study consisted of 178 KG2 students; (86) male students and (92) female students during the second semester of the academic year 2011/2012. The participants of the study were distributed into four groups (two female groups experimental and control, and two male groups (experimental and control), the experimental groups were taught Math by well trained teachers while the control groups were taught by their teachers using conventional methods. The participants were 44 male students for the experimental group and 42 male students for the control group, while the female students for the experimental and control group were 47 and 45 respectively. Descriptive statistical analyses were used (means and standard deviation) for the pre and post-tests of students' Math test. Comparison statistical methods were used (Two Way ANOVA) analysis of variance to make a comparison between the control and the experimental groups and gender variable (male and female). The findings of the study indicated that there were statistically significant differences in the post-test between the control and the experimental groups in favor of the experimental group, and there was no statistically significant difference in the students' performance due to gender. The researcher concluded with recommendations to enhance the effect of training Math teachers on students' achievement in Mathematics such as conducting further studies on other populations and for a longer period time.

Keywords: Teachers Training, Students' Achievement
Introduction

Good teaching begins with knowing the learners—what they are like developmentally, individually, and culturally. When teachers know what kindergarten children are like developmentally, it means they are familiar with the typical social and emotional, physical, cognitive, and language characteristics of children at this age. This knowledge enables teachers to have reasonable expectations of what children in a class are likely capable of. To know children individually means to recognize that each child comes with unique needs, interests, abilities, language, temperament, prior experiences, and background knowledge. Teachers who know children culturally are sensitive to multiple perspectives and consider those perspectives as they make decisions about children’s development and learning (Bredekamp & Copple 1997).

Like all children, those of Kindergarten age are unique individuals with diverse linguistic, cultural, and experiential backgrounds, and different strengths, talents, abilities, and interests. Early learners are also unique in their movement along the developmental continuum, and teaching practices must be responsive to this wide variation.

Despite their differences, Kindergarten age children also share a number of common characteristics, particularly in relation to their capacity for learning. Kindergarten children learn with their whole bodies, their minds, and their hearts. They learn best when activities are play based, involving exploration and inquiry, with hands-on activities that engage all their senses. Activities are developmentally and culturally appropriate environments provide for their social-emotional, intellectual, aesthetic, artistic, and physical development and growth in social responsibility the adults in their world—teachers, families, school and community members—work together to support them.

These characteristics are related to the ways in which young children’s brains are developing. Between the ages of three and eight, their frontal lobe networks—responsible for memory, problem solving abilities, and processing speed—are growing rapidly. By age six, the brain is 90 percent of its adult weight. By age seven, the prefrontal cortex, the “control centre” of the brain, is at its most dense. Synaptic connections in sensory and motor areas are firmly established, and pruning (the process of eliminating synapses) has begun.
Because of the activity occurring in the higher brain control centres, this is a critical period for the development of executive functioning, with increasing cognitive flexibility, working memory, levels of attention, self-regulation, and ability to inhibit impulses. (Bergen, D., & Coscia, J. (2000).)


This physiological development is possible because of the brain’s plasticity. Effective early learning programs are those that take full advantage of the brain’s plasticity. Full day Kindergarten offers opportunities to support and enhance every aspect of children’s development articulated in The Primary Program: A Framework for Teaching: aesthetic and artistic, emotional and social, intellectual, physical, and development of social responsibility. As discussed here, Kindergarten children are developing rapidly in all of these areas, creating a range of opportunities to meet Prescribed Learning Outcomes.

The arts provide unique opportunities for Kindergarten children to explore and express ideas and feelings, and to use imagination and creativity. Arts education activities appeal to all the senses, and children’s engagement is integrated naturally. For example, they may respond to music through creative movement and to storytelling through dramatic play, while artistic representations of family and community support children’s growing understanding of their own and others’ culture.

Kindergarten children take great delight in experimenting with different art media and are not overly concerned with producing realistic likenesses. They are more interested in expressing their emerging concepts of self, family, friends, and other topics that engage them. During the Kindergarten year, many children develop a repertoire of graphic symbols for things in their environment, such as people, houses, and pets. Because these symbols are based on children’s
conceptual understandings rather than direct observation, they are often unique to individual children, which is appropriate to their level of development.

One of the notable changes that often occur during Kindergarten is an increasing interest in representing objects in a more contextualized way. For example, children may move from representing objects that appear to float in space to using a baseline to position objects in relation to the ground. Some children will begin to use space and time representations to show events in order, such as a story or a sports game. In this way, visual art materials are not only tools for expressing ideas, but also tools for cognitive and conceptual development.

Learning to teach is a developmental process. The process involves the acquisition of professional experience over an extended period of time. In general, new teachers need from three to seven years in the field to reach proficiency and have the maximum impact on student achievement (Berliner, 2000). Difficulties of first year teachers have been documented for years, though only in recent years has there been an interest in addressing the specific needs and challenges of new teachers (Mager, 1992). The greater attention being paid to new teachers may come as a result of the more challenging conditions those teachers, both novice and veteran, face in today’s world.

Education provides people with the tools and knowledge they need to understand and participate in today’s world. It helps to sustain the human values that contribute to individual and collective well-being. It is the basis for lifelong learning (UNESCO, 2006). Many factors may determine the success or failure of a student in our system; however, the single most important factor in student learning is the effectiveness of the classroom teacher (Ascher & Fructer, 2001; Darling-Hammond, 1999; Ferguson, 1991; Marzano, Pickering, & Pollock, 2001). Teaching is an extremely complex process; there are a wide variety of professional decisions and teaching methods which impact student achievement.

According to Danielson (1996), “a teacher makes over 3,000 nontrivial decisions daily” (p. 2), these decisions fall into four areas: planning and preparation, classroom management, instructional practices, and professional responsibilities. Each of these areas is made up of a
complex set of interdependent components in which teachers strive to create positive learning experiences for their students. Fitterer, Harwood, Locklear, Wright, Fleming, and Levinsohn (2004) redefined two of these areas, classroom management and instructional practices, into a classroom observation protocol named T4S.

The T4S protocol divides effective instruction and classroom management into seven functional areas. Three focus specifically on instructional techniques and practices, and the remaining four address the levels of cognition, student engagement, assessment, and the general learning environment. Effective teachers manage all seven of these areas to support learning for all students.

Statement of the problem

There is a large body of research which outlines effective instructional techniques. A second well established body of evidence exists which describes the qualities of effective staff development.

However, there is very little research that analyzes the impact of professional development on student academic performance. This lack of valuable information has limited researchers’ abilities to support teachers in their quest for increased student achievement (Guskey, 1997).

Purpose of the study

Connecting staff development to student achievement is critical in our current educational climate.

If a direct connection can be established between staff development and children's learning, then legislative entities will be more likely to provide resources to expand teacher training opportunities that can lead to positive changes in student achievement.
Connecting staff development to children's learning can also be important at the school planning level. If schools clearly understand the most effective methods of delivering staff development (in relation to student achievement), then more effective decisions can be made as to the type and amount of staff development to utilize at each site (Sparks & Hirsh, 1997). This further emphasizes the need to develop measurable connections between staff development and children learning.

The goal of the study is first to determine if the training led to a change in the instructional practices. Secondly, if the instructional methodologies did change, did the children's performance rates also change? In other words, did the students grow at a faster rate than projected on the district assessment?

Research questions

The central questions that will guide this inquiry are the following:

1. Did kindergarten teachers’ instructional practices change as a result of participating in a professional development program?

2. If kindergarten teachers adopted the new instructional practices, did the changes have an impact on children's performance as measured on the exam of academic progress?

Significance of the study

Extensive pressure for improved student performance falls directly on the shoulders of classroom teachers.

To support teachers who face these professional challenges, schools should provide staff development opportunities that promote continuous professional improvement.
The practical significance of the study is found in the need to support kindergartens as they create effective staff development opportunities that also lead to improved academic performance of students. This study will provide an in-depth look at an actual staff development program in practice.

**Literature Review**

A review of the literature verifies the need for this study. Current federal and state legislation requires teachers to learn and utilize research based instructional practices to support student learning. Under the requirements of No Child Left Behind (NCLB) (2002), 95 percent of all students must score at or above grade level on state assessments in English language arts and mathematics. Over the past three years, each state has defined incremental performance requirements on its state assessments.

The requirements will be raised proportionally over a ten year period so that by the year 2014 the minimum performance requirements of 95 percent of all students performing at or above grade level on both English language arts and mathematics will be achieved. Current performance rates reflect that the number of schools not making the minimal performance gains is increasing and will continue to do so (NEA, 2005).

Staff development initiatives show the greatest promise to assist schools and teachers in the process of increasing student achievement. Though staff development advocates promote the connection of staff development to student achievement, a comprehensive review of the literature reflects that very few studies attempt to do so (Darling-Hammond, 2000; Gordon, 2005; Guskey, 2002; Showers & Joyce, 2002).

The review of the literature is divided into the following sections: foundations for building staff development plans, effective instructional practices, methods for delivering effective staff development, connecting staff development to student learning, measuring success of staff development program, and research methodologies. Overall, the review of the literature is designed to build a foundation to answer the central research questions for this study. These questions are: would teachers’ instructional practices change as a result of participating in the
professional development program designed and supported by the staff and administration of Antelope Elementary? If teachers did adopt the new instructional practices, did the changes have an impact on student performance?

**Staff Development Planning**

The foundation for educational reform at the school level can be found within a comprehensive model of staff development. An effective staff development plan should be based on school wide designs focusing on the needs of target learners. The process of building a plan begins with a comprehensive review of the data which identifies targets for improvement. Effective staff development plans are built around the skills of people (Garcia & Donmoyer, 2005). Staff development leading to changes in practice is not created from one shot workshops; it is, however, built upon continuous effort of teachers over time to master skills related to teaching practice. The interconnection between teacher practice and student learning is the primary catalyst for instructional improvement (Ancess, 2002; Stobie, Boyle, Wolfson, Trusewell, & Connaughton, 2004).

Creating change is difficult within any school system. Hannay and Denby (1994) conducted a study of teacher leaders who supported the implementation of a variety of staff development initiatives in schools. The findings of the study presented a case outlining change in the staff development process. Essentially the researchers reported that before any favorable change can occur at a school site, the school must first overcome any negative culture related to the adoption of the innovation.

Taking staff development from the delivery process to implementation process is difficult, especially when many teachers view staff development as something that is done to them. Teacher leaders often find it difficult to place themselves into a professional position to lead or support change. If the teacher leader comes from the classroom level, many peers will not accept them in the role of expert in relation to the innovation. Several other important implementation factors may impact the change process.
These include the complexity of the innovation and the pace at which the innovation is adopted by the staff development participants. Furthermore, the individual needs of the participants are not addressed the innovation is doomed to failure.

Long term changes in school practice arise from a supportive community culture. Change is focused on the needs of students and a model of continuous professional learning. Stakeholders throughout the learning community from parents, teachers, and administrators work collaboratively toward mastering the staff development goals (Muijs, Harris, Chapman, Stoll, & Russ, 2004). Finally, effective staff development is built on goals to support all students and empowers school leaders to take the responsibility to support and engage all students in effective learning opportunities (Peters, 2002).

Marzano (2003) described four major factors that impact student learning. They include student level, teacher level, program level, and school level factors. Though each of these factors impacts student performance, teachers’ individual instructional decisions generate the greatest impact. Others report similar effects of teacher performance on student achievement. In a review of New York state schools comparing poverty, funding levels, and teacher experience, Ascher and Fructer (1998) found that a majority of New York’s lowest performing schools are classified as both high poverty and high minority schools. In a comparison between low performing and exemplary elementary schools, the low performing schools reported that approximately 70 percent of the teaching staff possessed full time teaching licenses. In contrast, at the high achieving schools 93 percent of the teachers possessed full time teaching licenses. The single most important finding of this study is that there is a strong relationship between teacher training and expertise and student academic performance.

According to Strong and Hindman (2003) high quality teachers demonstrate six important characteristics which promote effective learning opportunities for all students. Effective teachers possess a well established knowledge set which provides a foundation for content instruction.
Teachers have a propensity for caring and supporting the students that they teach. Effective teachers possess strong classroom management techniques, and a well-developed ability to plan and organize instruction. Effective teachers are highly skilled at applying high quality instruction techniques utilizing a wide variety of effective instructional strategies.

Finally, effective kindergarten teachers have the ability to manage assessment, both formative and summative, in a manner that allows both the teachers and students the opportunity to clearly identify learning targets and receive proper feedback along the way so that mastery can be achieved by all students.

In line with Strong and Hindman, Darling-Hammond (1999) reported that teacher quality characteristics such as certification status and degree in the field to be taught are significantly correlated with successful student achievement. Evidence clearly connects quality teaching to student academic performance. Over time as schools look to improve student achievement they must also look to support staff development initiatives that improve teacher instructional practices.

Effective teachers possess a variety of skills which elevates the number of high quality learning opportunities available to all students. According to Bohn, Roenhric, and Pressley (2004) effective primary grade teachers engage student by creating highly productive learning opportunities. Higher levels of engagement translate into higher achievement with improvements in the areas of reading, writing, and standardized testing in general. Highly effective teachers make extensive efforts in involve all students in well planned enjoyable activities which are designed to target a series of important learning expectations.

Effective teachers spend more time teaching and use more diverse instructional techniques to promote learning among students. They vary deliver methods and presentation formats moving through whole group, small group, and individual instruction for students.

Several other researchers reported significant effect of teacher quality on student performance. Marzarno (2003) and Sanders and Rivers (1996) reported that teacher effectiveness has a dramatic impact on student achievement. Students who are assigned to ineffective teachers
several years in a row demonstrate significantly lower achievement than those students who are assigned to several highly effective teachers.

Unfortunately this could be a systemic problem. Students possessing limited academic capital tend to be assigned to teachers who are less qualified to address their needs. In the state of California, for example, there are large disparities in opportunities available to rich and poor students. A large number of students attend school in dilapidated buildings, without textbooks, materials, or qualified teachers – the most basic elements of schooling (Darling-Hammond, 2004).

Teacher effectiveness directly impacts the academic progress of students. According to Marzano (2003), the more effective the teacher the greater the potential for academic growth of the student. Clearly, teachers need to know and understand the elements of effective instruction if they are going to achieve the highest academic gains among their students.

**Design and Methodology**

**Population of the study**

The population of the study consisted of all KG2 children in Wadi Al Sir Directorate of Education which they form about 616 (320 female and 296 male children) distributed in (21) schools during the academic year 2011/2012.

**Sample of the study**

The sample of the study was selected by random sampling technique. It consisted of (178) children, (86) male and (92) female children at Al Rabahiya el Janubiya school, Iraq el Ameer secondary school, Um Abharah secondary school and German secondary school in Wadi el Sir Directorate of Education. This sample was used to measure the impact of teachers training on children's' performance and was distributed into two sections in each school. Two control groups and two experimental groups.
Design of the study

The participants of the study were divided into two groups, experimental and control. The participants of the experimental group were taught by well trained kindergarten teachers for (8) weeks, while the participants of the control group were taught by teachers who are not trained and who use traditional way of teaching for the same period. A pre-test was given before training the kindergarten teachers to both groups to make sure they are equivalent and the same test was administered as a post-test after training the kindergarten teachers to see whether the training program of teachers had any influence on the experimental groups.

Instrument of the study

The researcher measured the effectiveness of kindergarten teachers' training and its effect on their children's' performance, then the researcher designed a test based on the instructional material of KG2 math and collected the data. Validity and reliability were ensured. Both groups; the experimental group as well the control group, were taught by their teachers. The subjects in both groups took a pre-test to determine their actual level before starting the experiment, and the same test was administered as a post-test at the end of the experiment to assess subjects' achievement. The time interval between the pre-test and the post-test was (8) weeks; a period long enough to minimize the effect of the pre-test on the results and conclusions of the experiment.

Reliability of the instrument

To ensure the test reliability, the researcher followed test/retest technique. The researcher applied it to a pilot sample of (25) children who were excluded from the study with a two-week period between the test and the re-test. The reliability of the test was calculated using correlation coefficient and it was appropriate for conducting such a study.

Validity of the instrument

The researcher designed a math test taking into consideration the instructional material. The researcher validated the instrument by submitting it to a jury of three supervisors of Mathematics
working at the Fifth Directorate of Education, and two kindergarten teachers of Math. The researcher followed the recommendations of the referees and made amendments accordingly. When producing the final version of the test, the remarks and recommendations of these Math experts were taken into account.

**Instructional material**

The instructional material was KG2 Math which includes several mathematical concepts, but the researcher covered just some mathematical concepts during the application period.

**Procedures of the study**

The participants of the study were divided into two groups, experimental and control: The participants of the experimental group were taught by well trained teachers for (8) weeks, while the participants of the control group were taught by their teachers who are not trained and who use traditional way of teaching for the same period.

The researcher did the following:
- Selected the kindergartens.
- Ensured the validity and reliability of the instrument of the study.
- The researcher conducted the study with the help of the teachers of Math.
- Applied the instrument of the study.
- Used SPSS to analyze the collected data.

There were four groups of students: two experimental groups and two control groups. All groups received 8 weeks of instruction of Math. Children in the experimental groups were taught by well trained teachers, while children in the control group were instructed by their teachers through using the traditional way. The traditional instruction in this study was exercises and drills given by a teacher, use of textbooks and other materials, and a clear explanation of the rules to students. They focused on memorization. The teacher reviewed some of the textbook topics.

**Statistical Analyses**

To answer the study questions, descriptive methods (means and standard deviation) were used for pre and post tests for Math test for both the experimental and control groups.
Differences statistical method (T-test) was used to make a comparison between the control and the experimental groups.

**Findings of the study**

The purpose of this study is to investigate the effect of training kindergarten teachers on tenth grade students’ performance in Math in Al Rabahiya el Janubiya school, Iraq el Ameer secondary school, Um Abharah secondary school and German secondary school in Wadi el Sir Directorate of Education. Two control groups and two experimental groups.

The researcher followed the equivalent pre /post test two group designs. Therefore, the means, standard deviations and Two-Way ANOVA analysis of variance were used to analyze data. The results will be displayed based on the questions of the research.

To determine if there is a statistically significant difference between the male and the female groups, a t-test for independent samples was conducted. Table 1 shows the results.

**Table 1: Means and Standard Deviations of the Achievement of Male and Female Groups on the Pretest.**

<table>
<thead>
<tr>
<th>GROUP</th>
<th>SEX</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>Male</td>
<td>68.80</td>
<td>12.307</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>69.89</td>
<td>10.590</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>69.36</td>
<td>11.401</td>
<td>91</td>
</tr>
<tr>
<td>Control</td>
<td>Male</td>
<td>67.48</td>
<td>10.317</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>69.60</td>
<td>10.554</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>68.57</td>
<td>10.434</td>
<td>87</td>
</tr>
<tr>
<td>Total</td>
<td>Male</td>
<td>68.15</td>
<td>11.332</td>
<td>86</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>69.75</td>
<td>10.515</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>68.98</td>
<td>10.916</td>
<td>178</td>
</tr>
</tbody>
</table>

Table 1 indicates that the difference between males and females is not statistically significant at α=0.05. Thus, since the difference was not significant, the two groups were assumed equivalent
and the sample was divided into two groups, an experimental and a control group. The experimental group which was taught by a well trained kindergarten teacher consisted of (44) male children and (49) female children while the control group consisted of (42) male children and (45) female children.

To determine if the two groups are equivalent in their performance in Math, a pretest was conducted and Table 2 presents the results.

Table 2: T-Test Results of the Experimental and the Control Groups on the Pretest.

<table>
<thead>
<tr>
<th></th>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GROUP</td>
<td>28.893</td>
<td>1</td>
<td>28.893</td>
<td>.240</td>
<td>.625</td>
</tr>
<tr>
<td></td>
<td>SEX</td>
<td>115.300</td>
<td>1</td>
<td>115.300</td>
<td>.958</td>
<td>.329</td>
</tr>
<tr>
<td></td>
<td>GROUP * SEX</td>
<td>11.684</td>
<td>1</td>
<td>11.684</td>
<td>.097</td>
<td>.756</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td>20936.903</td>
<td>174</td>
<td>120.327</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Corrected Total</td>
<td>21089.910</td>
<td>177</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2 shows that the difference between the achievement of the two groups on the pretest is not statistically significant at α=0.05. Since there is no statistically significant difference between the control and experimental groups on the pretest, the groups were assumed equivalent.

At the end of the experiment, a t-test for independent samples was conducted to determine if there was any statistically significant difference between the males and the females on the posttest, which may be attributed to gender. Table 3 shows the results.
Table 3: Mean and Standard Deviations of the Achievement of Male and Female Groups on the Posttest.

<table>
<thead>
<tr>
<th>GROUP</th>
<th>SEX</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>Male</td>
<td>81.82</td>
<td>8.678</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>82.34</td>
<td>8.532</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>82.09</td>
<td>8.559</td>
<td>91</td>
</tr>
<tr>
<td>Control</td>
<td>Male</td>
<td>76.64</td>
<td>9.675</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>77.42</td>
<td>10.922</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>77.05</td>
<td>10.286</td>
<td>87</td>
</tr>
<tr>
<td>Total</td>
<td>Male</td>
<td>79.29</td>
<td>9.488</td>
<td>86</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>79.93</td>
<td>10.029</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>79.62</td>
<td>9.749</td>
<td>178</td>
</tr>
</tbody>
</table>

The results show that training kindergarten teachers had the same effect on male and female children and the difference between their achievements was not statistically significant.

Table 3 shows that there is a statistically significant difference at $\alpha=0.05$ between the achievement of the experimental group and that of the control group on the posttest in favor of the experimental group whose teachers are well trained. This difference indicates that training teachers on the modern and best strategies for teaching Math had a positive effect on students' achievement in the Math exam. The mean score for the experimental group on the posttest was 82.09 while that of the control group was 77.05.

The researcher also conducted a two-way analysis of variance to analyze the posttest achievement scores of the two groups. Table 4 shows the results.
Table 4: Summary of the Two-way Analysis of Variance of the Achievement of the control and the Experimental Groups

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP</td>
<td>1131.545</td>
<td>1</td>
<td>1131.545</td>
<td>12.562</td>
<td>.001</td>
</tr>
<tr>
<td>SEX</td>
<td>18.817</td>
<td>1</td>
<td>18.817</td>
<td>.209</td>
<td>.648</td>
</tr>
<tr>
<td>GROUP * SEX</td>
<td>.734</td>
<td>1</td>
<td>.734</td>
<td>.008</td>
<td>.928</td>
</tr>
<tr>
<td>Error</td>
<td>15673.719</td>
<td>174</td>
<td>90.079</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>16823.781</td>
<td>177</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4 shows that there is a statistically significant difference between the experimental group and the control group on the posttest, the experimental means was significantly better than that of the control group. However, the information indicates that there was no significant difference attributed to the interaction between the treatment and gender.

To sum up, the researcher believes that the difference in the kindergarten children was attributed to the training of the teachers. The experimental group subjects managed to significantly improve their Math skills in a period of 8 weeks. The improvement achieved by the control group subjects, however, was not statistically significant. By comparing the results achieved by the two groups, the researcher reached the conclusion that the improvement achieved by the experimental group may have been attributed to training the kindergarten teachers.

As a result of this experience, the researcher concluded that children were more engaged in learning when they were taught by modern methods conducted by their teachers who are well trained.
Conclusion

In conclusion, as a treatment designed to improve the performance of kindergarten children in schools, the teacher training provided to teachers of kindergarten in Amman appears completely effective. While it is possible that the services offered to kindergarten teachers in these kindergartens may have other positive outcomes that are not captured in children test scores, such as improved working relations among school staff, administrators would be well advised to rethink the current program. More generally, educators and school administrators should carefully examine the nature of kindergarten teacher professional development in Jordan.
References


