
Using technology in Early Childhood Education Assessment of Tabshoura/Kindergarten experience

Why use ICT¹ with young children?

There is support and interest across the whole education sector in Lebanon and clear guidance from the minister of Education for the development and integration of ICT into education policy, curriculum, and practice, starting at very young ages. ICT role is to motivate and improve students' learning skills, and familiarize them with technology from a very young age. However, the introduction and use of ICT in early childhood education should be defined by a clear understanding of the purposes, practices, and social context of early childhood education.

Some authors have expressed the view that computer/ICT use is not appropriate for young children's cognitive, physical, social, and emotional development. However, there is no clear evidence to support this claim, and this view has increasingly been replaced by the view that, when used appropriately, ICT can be a useful tool for supporting young children's learning and development. It all depends on when and how to use these resources. Many researches indicate ways that ICT can support children's learning, such as language development and mathematical thinking, including supporting learning for children from diverse cultural or language backgrounds, or with special needs. It can also have an important impact on children motivation and engagement in learning. It can also, if used appropriately, provide a context for collaboration, co-operation, and positive learning experiences among children, or between children and adults. "However, research also indicates that practitioners must be conscious of the kinds of learning interactions they would like to occur in the context of ICT use (including between adults and children, or between children themselves), and adopt pedagogical strategies to support these. Without good guidance, examples, and support for their own professional learning, early childhood educators will make their own decisions about the nature and extent of ICT use in children's learning. These decisions are influenced by such factors as educators' own level of confidence with ICT, and their beliefs about learning and teaching in the early childhood years." (Bolstad, 2014)

¹ ICT information and communication technologies: Anything which allows us to get information, to communicate with each other, or to have an effect on the environment using electronic or digital equipment (in some literature known as learning technologies, or simply technology).

How to assess online learning?

Until a few years ago, the quality of a course was measured by evaluating the content, the pedagogy and the learning outcomes (Bemer, 2012). This approach changed to a system oriented toward the learning process where we take into account a combination of activities that contribute to the educational experience. (Thair, Garnett & King, 2006). This holistic approach is often applied to develop assessments for online education.

It is difficult to create an evaluation tool that can assess the complexity of an online education, taking into account all aspects of this form of teaching, the wide variety of online courses and therefore standards. How to evaluate the evolution of the course, the students' perception and their feedback? The evaluations are often limited to the design and accessibility and cannot assess the experience of the students and the teachers.

A full assessment should exceed the design aspect. It must showcase what makes this course unique, what ICT adds to learning and measures the interactions among pupils, and pupils and teachers².

Given all this data, we tried to set up an evaluation system that takes into account the complexity of our experience of an ELearning platform for early childhood education.

The research

The purpose of the study is to evaluate the impact of e-learning on early childhood education (age from 3-5), more specifically the impact of the Tabshoura Kindergarten platform on young Syrian refugees in three of the five World Vision educational centers in the Bekaa/Lebanon.

The sample included 134 children between 3 and 6 years old, whereby 100 of the children are using the Tabshoura/Kindergarten e-learning platform in their program and the remaining 34 are taught using the traditional learning approach.

Teachers completed a pre-evaluation sheet, assessing their pupils' learning skills and a post-evaluation sheet assessing the evolution of those skills after the completion of the 10 weeks' program implemented by World Vision.

I. Descriptive and inferential statistics:

The first component of the evaluation is based on the "Learning Objectives". Therefore, the study intends to examine whether better learning is provided to children using e-learning material. It includes descriptive and inferential statistics.

Comparison of the scores between Pre and Post tests for the control group (Not using the Tabshoura /kindergarten e-learning platform)

² One can thus assess emails, forums, posts, questions.

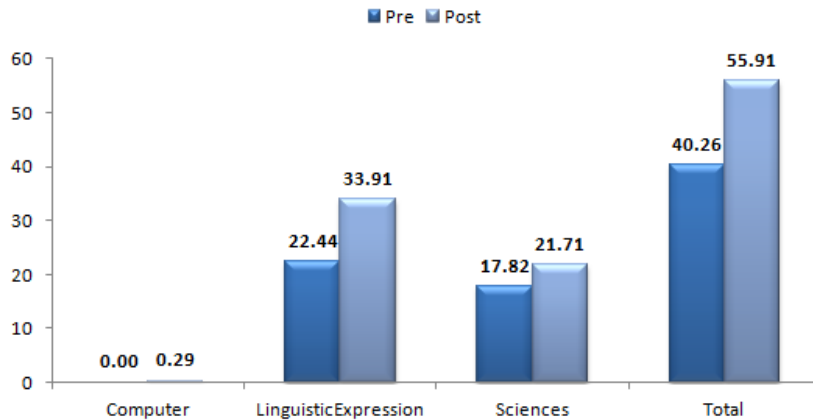
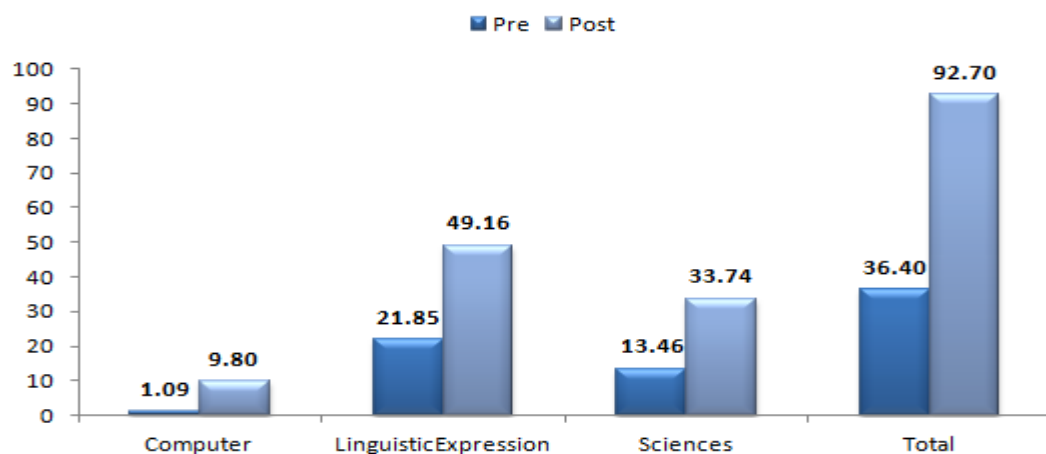


Figure 1. Comparison of the scores between Pre and Post tests for the control group

The results for the pre and post test for the control group in the above figure showed the following:

1. Computer: The mean³ of computer increased from 0.00 (0.00%) in pretest to 0.29 (2.94%) in posttest (Sig = 0.156 > α → the improvement wasn't significant).
2. Linguistic expression: The mean of linguistic expression increased from 22.44 (38.69%) in pretest to 33.91 (58.47%) in posttest with percentage of improvement = 51.11% (Sig = 0.000 < α → the improvement was significant).
3. Sciences: The mean of sciences increased from 17.82 (49.51%) in pretest to 21.71 (60.29%) in posttest with percentage of improvement = 21.78% (Sig = 0.027 < α → the improvement was significant).

**Comparison of the scores between Pre and Post tests for the experimental group
(Using the Tabshoura /kindergarten e-learning platform)**



³ **Mean:** The most common expression for the mean of a statistical distribution with a discrete random variable is the mathematical average of all the terms. To calculate it, we add up the values of all the terms and then divide by the number of terms.

Figure 2. Comparison of the scores between Pre and Post tests for the experimental group

The results for the pre and post test for the control group in the above figure showed the following:

1. Computer: The mean of computer increased from 1.09 (10.90%) in pretest to 9.80 (98.00%) in posttest with percentage of improvement = 799.08% (Sig = 0.000 < α → the improvement was significant).
2. Linguistic expression: The mean of linguistic expression increased from 21.85 (37.67%) in pretest to 49.16 (84.76%) in posttest with percentage of improvement = 124.99% (Sig = 0.000 < α → the improvement was significant).
3. Sciences: The mean of sciences increased from 13.46 (37.39%) in pretest to 33.74 (93.72%) in posttest with percentage of improvement = 150.67% (Sig = 0.000 < α → the improvement was significant).
4. General total: The mean of total learning skills increased from 36.40 (35.00%) in pretest to 92.70 (89.13%) in posttest with percentage of improvement = 154.67% (Sig = 0.000 < α → the improvement was significant).

Comparison of the scores between Control and Experimental groups for the Post-test results

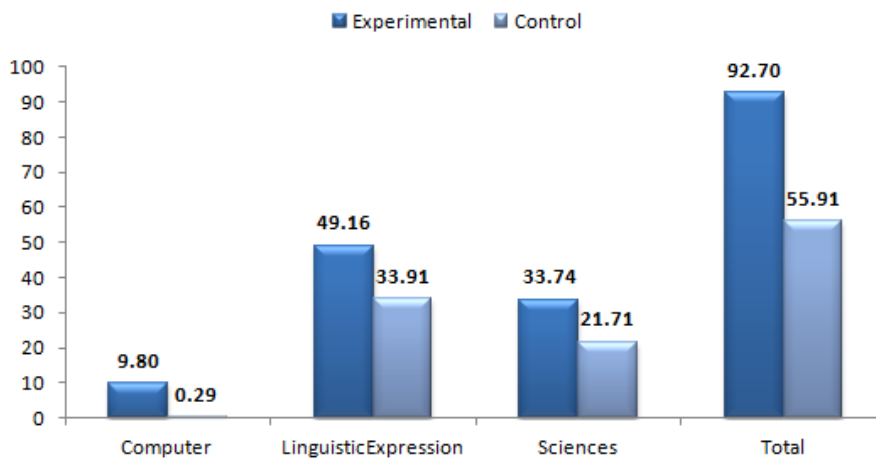


Figure 3. Comparison of the posttest scores between Control and experimental groups

The results of the posttest scores for the control and the experimental groups in the above figure showed the following:

1. Computer: The mean of computer for the experimental group = 98.00% while it's equal to 2.94% for the control group, percentage of difference = 97.00% (Sig = 0.000 < α → the difference was significant).
2. Linguistic expression: The mean of linguistic expression for the experimental group = 84.76% while it's equal to 58.47% for the control group, percentage of difference = 31.02% (Sig = 0.000 < α → the difference was significant).

3. Sciences: The mean of sciences for the experimental group = 93.72% while it's equal to 60.29% for the control group, percentage of difference = 35.67% (Sig = 0.000 < α → the difference was significant).
4. General total: The mean of total learning skills for the experimental group = 89.13% while it's equal to 53.76% for the control group, percentage of difference = 36.69% (Sig = 0.000 < α → the difference was significant).

Conclusion (pre and post evaluation)

Comparing the results of the pretests and posttests of control and experimental groups it is concluded that the control group has a mean of 40.26 on the total measurements items in the pretest, since they showed that they are unable in computer, linguistic expression and sciences, whereby they showed a null ability in computer. Whereas the experimental group has a mean of 36.4 on the total measurement items of the pretest, the results indicate that students are unable in computer, linguistic expression and sciences, whereby the lowest score is for computer. The control group scored better in their pretests than the experimental group.

Having a look on the posttest of both groups, the posttest scores of the control group (who did not use the platform) indicated that the students improved in "linguistic expression" as they significantly improved in "words", while they slightly improved in "sciences" and did not show improvement in "computer" and slightly dropped in "numbers". Students of the control group, who received their learning in a traditional approach, had a 38.86% total improvement, which is considered a slight improvement. However, the scores of the posttest of the experimental group indicated that students improved significantly in all items of computer, linguistic expression, and sciences, whereby the most significant improvement was in the scores for "words". Students of the experimental group, who received their learning via Tabshoura e-learning platform, had a 154.67% total improvement, which is considered a very significant improvement.

The students of the experimental group (who used the platform) showed a higher level of significant improvement than the students of the control group, as the control group students moved from "unable" stage to "learning" stage whereas the students of the experimental group moved from being "Unable" to being "Able". This outcome implies that Tabshoura e-learning contributed in significantly improving and developing skills and knowledge of students in computer, linguistic expression, and sciences.

Therefore, this study reinforces the importance of using Tabshoura e-learning platform in providing better learning to students in kindergarten. However, the findings of this study could not be generalized as the sample of participants is considered relatively small in order to make definite and generalized conclusions; hence, testing on a bigger sample is needed to confirm the results.

Some issues in research design should be taken into consideration such as the proportional number of students that are participating in both groups as the students in the experimental group significantly outnumbered the students of the control group, in order to provide better credibility and reliability of the results.

It is also important to investigate whether there are other factors, not related to the intervention, that affected the outcomes, for example: the characteristics of the chosen sample of both groups or the teachers' qualifications.

II. Class observations and teacher's interviews

We did several class observations and interviewed the 6 World Vision's Care Givers who used the platform in order to understand better the positive result we had in a short period of time. Our investigation's main outcomes showed the importance of:

- **Motivation:** Tabshoura had a very positive impact on children's motivation and eagerness to learn. Even though they had no computer skill at all, they mastered the usage of the mouse and Moodle functionality in a few sessions.
- **Collaboration and interaction:** having 2 children work together on the same desktop had a big impact on learning. One of the risks that researches showed is that ICT could isolate children and prevent their interaction. This was not the case. Interaction was numerous among them. Children who acquired skills helped the others to complete the tasks and showed them how to do it.
- **Coaching:** The importance of DOT's role in the involvement of teachers. Dot Teach up! Program is a holistic approach. It helped the teachers to improve not only their ICT skills but also their teaching skills. Over time the teachers also developed confidence in their technical skills and encouraged the children to increase their usage of the platform. They also changed their pedagogical approach by using more alternative fun ways to teach.
- **Friendliness:** Tabshoura/Kindergarten has a consistent structure which makes it easy to use. It is colorful and fun.
- **Quality and languages:** The quality of the content and the trilingual activities of the platform motivated the teachers to use Tabshoura with their students.
- **The alignment of Tabshoura with the Lebanese curriculum:** Tabshoura complemented the class teachings because it is in line with the Lebanese curriculum taught in class. This helped the teachers to integrate it in their lesson's plan.
- **Positive impact on language and scientific skills:** Hearing helped to speak better and seeing made it easy for young children to understand some of the scientific concepts (Heavy/light- Living/non living- fruits and vegetables- squares and circles).

RECOMMENDATIONS

- The study showed that "Tabshoura e-learning platform" has a positive effect on kindergarten students learning since it improved their knowledge and skills in computer, linguistic expression and sciences. Therefore, it is recommended to promote this platform in schools as a means to provide better learning experiences and improvement in students' achievements.

- The study showed that “Tabshoura e-learning platform” has a positive effect on motivation and autonomy of the children. Therefore, it is recommended to promote this platform in schools as a means to improve the engagement of the children to learn.
- Increasing ICT capability of teachers is essential to succeeding in implementing ICT in classrooms and teaching practices. It is recommended to train a champion teacher in each educational institution who can coach others teachers on regular basis.
- Given that the platform is aligned with the Lebanese curriculum, it complements the teaching material. It is recommended to integrate the platform in the class lesson plan and not to use it as an independent resource.
- This study would serve as a base study for other expanded studies that would include not only the kindergarten students but also higher grades’ students in order to examine the benefit of this platform on students of higher grades.
- In order to provide better credibility and reliability of the results, some issues in research design should be taken into consideration such as the proportional number of students that are participating in both groups since the students in the experimental group significantly outnumbered the students of the control group.

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