УДК 51

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VIEWS OF PRESERVICE TEACHERS ABOUT USING THE TECHOLOGY INTO MULTILINGUAL MATHEMATICS CLASSES

Аннотация. В данной статье исследуются результаты количественного исследования о взглядах будущих учителей математики об использовании технических устройств в многоязычных математических уроках.

Это будет полезно для будущих учителей математики, для учителей средней школы, а также для исследователей в области преподавания математики. В этой статье рассматриваются следующие вопросы: “Каковы преимущества и недостатки использования технологических устройств в образовании?”, “Каковы взгляды учителей математики об использовании технологических устройств?” и “Нужна ли нам интеграция технологий на уроках математики?”. Для проведения исследований нами были подготовлены две анкеты для будущих учителей математики от Университет имени Сулеймана Демиреля кафедры математики и естественных наук. Для одного из вопросников использована шкала Лайкерта, которая включает 20 тестовых вопросов. Эта анкета исследует взгляд учителей математики об использовании технологических устройств на уроках математики и на любых других уроках. Второй опросник состоит из 10 классических вопросов на разных языках, которые выявляют текущие позиции, потребности и убеждения учителей математики о существующих технологических устройствах и их использовании. Было выяснено, что интеграция технологий и многоязычие во многих школах находятся на достаточно хорошем уровне, но педагоги должны развивать свои навыки по использованию технологических устройств. Администраторы должны мотивировать будущих учителей математики для такой интеграции. Кроме того, путем адаптации технологических устройств, большинство учителей считают, что многоязычное математическое образование и интеграция технологий дают множество преимуществ для дальнейшего карьерного роста в квалифицированных перспективах.

LITERATURE REVIEW

Educators who can effectively manage and use the increasing amount of information to solve a lot of complex problems and make important decision making. Reigeluth (1999) said that traditional system of education is incompatible with the evolving demands of new age. The general characteristics of the new students are as “born with internet” or “born with technology”, so we call them as digital natives or the Net Generation. A very young child can easily use a computer and other technological devices. The students spend lots of their time using computer, cell phone, iPad and other media devices.

We can conclude that, technology is an integral part of the lives of the Net Generation (Prensky, 2007; Oblinger, 2008). The best style of education for the Net Generation is to learn in a classroom with integrated technology. According to Bebell et al. (2004) there is no direct and clear definition of technology integration but, we can say that technology integration is viewed as the use of technology for instructional purposes.

Consequently, we need to insert technological devices into classroom environment. The aim of technology integration is to improve student’s learning (Hew & Brush, 2006). But, which devices are the best for teaching mathematics? Also, is it enough to put only these devices into

classroom? Who and how will use these devices? What are the most useful software for these devices? How can we motivate the teachers to use them? These are the questions that we need to answer before integrating the technological devices into classroom.
It is a fact that, if the teacher do now want to use the technology in his/her lesson, inserting any type of technological device into classroom will not have any meaning. So, before inserting these expensive devices into classroom we need to know two important things:
1) How useful each particular technology is (Moffatt, 2000);
2) The beliefs of teachers about the integration of technology into classroom.
When the teachers believe the effectiveness of the use of technological devices they will force the administrators to buy that devices.

Technological devices are quite expensive devices. So, knowing the usage of them effectively, is essential. There are many researches in this area. PLATO (Programmed Logic for Automatic Teaching Operations) was made by Donald Bitzer at 1959 in Illinois University and it was the first research on the effect of use of computers in education (Woolley, 1994). After Bitzer, every year hundreds of researchers made different researches in this area. Some of them are as follows:
1972, Vinsonhaler, Bass & Ronald compared computer assisted teaching and traditional teaching by analyzing 10 different researches; 1981, Simon proved that computers are more effective than traditional education methods;1991, Kulik & Kulik made a meta–analysis on the results of 254 researches about the results of computer aided teaching and its' effects on the achievement and attitudes of the students from kindergarten to university level;1994, Baker, Gearhart & Herman made the evaluation of the Apple Classrooms of Tomorrow;

1998, Sivin–Kachala analyzed 219 researches from 1990 to 1997 to assess the effect of technology on learning and achievement across all learning domains for different ages of learners;2001, Vale & Leder investigated the relation between the length of time using computer in mathematics and nature of the learning environment;

2005, Miller, Glover & Averis made the research about the effective use of the interactive whiteboard in the mathematics classroom;

2007, Kennewell, Tanner, Jones & Beauchamp analyzed the influence of ICT on the interactivity of teaching. When we say technological devices we mean any of computers (PC, Notebook, Netbook, tablet …), projectors (LCD, wide screen TV, overhead …), networks (internet, local network …), iPad, interactive whiteboard, smartphone, video cameras and other devices.
Linnenbrik & Pintrich (2003) offer that motivation is a fundamental concern among teachers and motivating students is a continual problem throughout education. There are no clear cut solutions for motivating the students but there are several strategies to help teachers on this problem. One of these strategies is using the technology in classroom more efficiently. Granito & Chernobilsky (2012) made a research and conclude that it is easier to motivate the students by using the technology, if they are not taught to hate technology at an early age.

By using technological devices teachers save time and may use this time to interact with the students and activate them. Liu, at al. (2007) conclude that there is evidence about the use of technology increase achievement and self-efficacy of the students. Computer programs and software are designed to control used time in teaching process, to supervise different types of learner styles and to check different levels of the students and that will help students to increase the achievement. Educators suggest that different students have different abilities to learn a topic. By using the technology, the teacher may use more than one method to explain the topic and it will help more students to understand the topic. Tunçok (2010) suggest that well-developed, computer-assisted education programs and tools support Gardner's Multiple Intelligence Theory (MIT).In every classroom there are different problems that may affect the teachers to pay attention to all students at the same time. So, the students need to study alone to learn the topics. Warschauer (2004) said that, by using personal computers, tablet PC, smartphone or another type of technological device, any student may learn or find the answers

of their questions personally. According to Koşar (2002) educational technology provide the personal education and learning. Wortham (2006) said that 70% of the students at the age of 4 – 6 can easily use the computers. According to Kung (2002) modern technology is convenient to support both of independent and collaborative learning environments.Kinder (1973) made an experiment in the University of Texas and said that: In a fixed time, people memorize 10% of the information that they just read, 20% of the information that they listen, 30% of the information that they see, 50% of the information that they see and listen, 80% of the information that they see, listen and talk about, 90% of the information that they touch, see, listen and talk about. That means, when we insert more sense to process of education we can learn and remember better. By using the educational technology a teacher may use more senses of students actively, and by this way the students learn better. Use of technology help both of the teachers and students to use time more efficiently (Akkoyunlu, 1998). The teachers may prepare the needed documents and manage the time before the lesson. So, they can decide and manage used time for checking homework or classwork, managing special activities during the lesson, explanation part of the topic, problem solving time and any other activities that will take place in the lesson.

. So, the students need to be comfortable to use it. All students and people of this age must have a level of technological background. Using the technology in education help us to give this necessary part of the knowledge of the technology for our students.

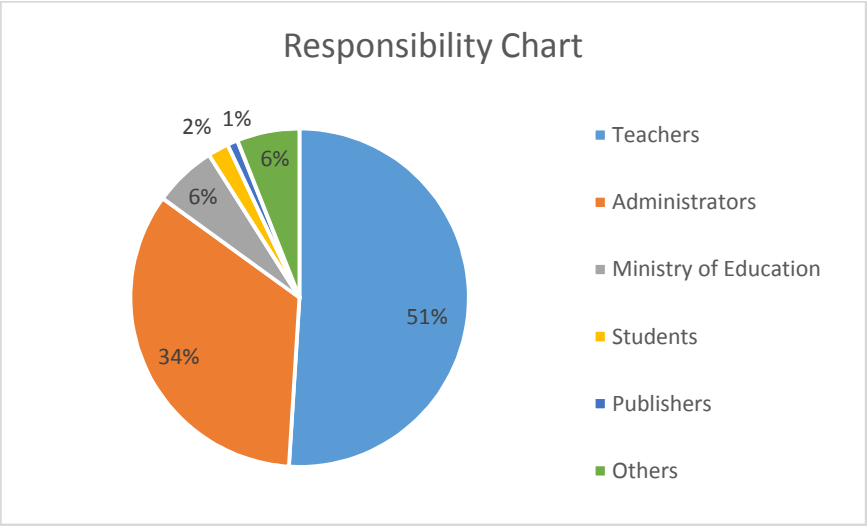
We can find many other advantages of using the technology in education. But, using all these advantages depend on the teacher. So, their beliefs on the integration of technology has crucial importance. Trench (2007) said that the most important thing in order to use the technological devices effectively is to educate the teachers. For example, if we do not teach all properties of the interactive whiteboard, the teachers will use them like a normal whiteboard, without using its rich potential.

Besides of these advantages, technology has also some challenges. Some of these challenges are: Lack of the technological devices, time to prepare materials, teachers' performance and motivation, socio–psychological development of students, ability to use technology, cost, lack of resources, materials and software, waste usage of technology, technical problems, and laziness in studying, curriculums or political problems, rapid change in technology and organizational factors. We can write articles for each of these factors one by one but, knowing only these captions will be enough for this article.

METHODOLOGY

The research that we used two questionnaires was prepared for mathematics teachers. It is limited with 40 teacher candidate from mathematics department. Results and contents of the questionnaires also include general ideas of teachers about usage of technology for education. So, the results may help other teachers and administrators.

As we see from the previous part, the technology has a lot of advantages for teachers but I know from my own experience and the teachers from teacher groups and communities that, majority of the teachers do not use this technology effectively. For example, some teachers use the interactive whiteboard like a normal whiteboard. They do not use its' properties and activities. So, I understand that there are some barriers that effect teacher's use of technology. As everybody knows, teachers will integrate the technological devices into their lessons. So, the most important right of audience belongs to teachers. Because of this, I prepared a Likert scale questionnaire including 20 multiple choice items. It was about the beliefs of the teachers on the integration of technological devices into classroom. By looking at results, I saw that a great majority of the teachers believe the benefits of technology integration. So, I prepared another questionnaire that include some open ended and some check box questions to distinguish current conditions of mathematics classrooms and abilities of teachers. From the responses I get valuable results. The most responsible person for the integration of technology is



This is an expected result. As I mentioned before, the teachers are the most important people in the integration of the technology into education. If they want to use any invention in their lessons they can do it without looking at any obstacle. Because of this, we need to motivate the teachers to use the technological devices in their lessons.

CONCLUSION

By looking at the recent researches and the first questionnaire we can conclude that, use of technological devices in education has uncountable number of benefits. It increases the achievement of students, attitudes of students towards mathematics lessons and motivation of the students. Technology can offer different teaching methods for teachers and different learning methods for students. By this way it can satisfy needs of different types of learners.

Technology integration convert our boring lessons to entertainment and attract attention of more students. When students like a lesson they study more and learn more. By this way it helps to increase achievement. Teachers can bring authentic materials into classroom environment and by this way they can take attention of the students and increase their motivation.

By using technology we can save the time in the lesson. Teachers do not need to waste their valuable time by writing on the board. Instead of this they prepare written materials before the lesson and use this free time in different activities like classroom management and dealing with more students. Technology integration make the lessons richer and entertaining by multimedia. So, the learned topics become more permanent in students' storage.

Use of technological devices are not so difficult. Integration of technology into classroom has advantages for both of the students and teachers. Teachers feel more comfortable in the lessons when they use the technology. Integrated technology in the classroom effect the interaction between the teacher and students and so, more students want to join the lessons. Also, we can decrease the anxiety of students towards the lessons and especially we can eliminate the negative effect of intangible mathematics lessons on students.The average of the first questionnaire is 4.24 in a 5-point scale, which is a very good result. It shows that the use of technology is very effective in all levels and subjects of education including mathematics in particular. Almost all teachers believe the benefits of the technology integration in education but they have got some barriers to use them efficiently. If the administrators and heads of departments eliminate these barriers, the teachers will teach their lessons more effectively.

We know that all of the benefits of technology are connected by the teachers' abilities and usage of technology. So, the most important thing is to teach the teachers to use the technology. After this we can expect the benefits of technology.

Administrators have two important roles in technology integration. First, they must believe the benefits of technology integration and buy the best qualified devices and software for their

teachers. Second, they need to support their teachers. This support may be in two ways; by words or behavior towards the teachers who use more technology and by solving their problems related with the technology and technical problems.

As a result, greatest responsibility in technology integration belongs to teachers. So, we need to motivate the teachers to integrate technological devices into their lessons. When they believe they can solve all types of barriers and give more valuable lessons to their students. Also, educational faculties have great responsibility to teach usage of the technological devices and preparation of educational software. These lessons may be some elective lessons but at least some of the teachers need to know preparation of the software.

Further researches may generalize my results for other lessons. Also, it will be beneficial if we search the methods for educating the teachers because, the most important things to use the technology made by the teachers; they need to find the programs, they must prepare the software and other needed materials. Seminars and courses for training the teachers have crucial importance. But, contents of these seminars must be controlled before. If we waste the time of teachers for some unnecessary seminars they will not be motivated to join other and maybe more important seminars.Some devices, like smartphone, need to be investigated and researchers must find the methods to integrate it into education because they are the most used technological devices of our century.

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