

Future Classroom with ICT Tools

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ABSTRACT

This paper focuses on the Future Classroom. It shows the whole process of building the classroom of the future from a normal classroom. It points out the problems and questions arising during the realization of the project, highlights the benefits of some ICT tools and shows the main lines of research running in connection with this issue. The main aims of the paper are: (1) to build an Ideal Classroom for the 21st century, (2) to integrate multimedia learning environment into teacher-education, (3) to test the efficiency of the newest ICT tools in education (4) to develop curriculum materials for different ages to foster deep understanding and to motivate students through bringing real-life problems and new directions of teaching methods to school. Flexible furniture and technology is also a perfect environment for students to obtain the skills they will need in the real-life knowledge-based digital world.

Keywords: ICT, innovation, multimedia learning environment.

Today we are living in a world of science and technology, where an explosion of knowledge is taking place. ICT stands for Information Communication and Technology. ICT refers to usage of electronic devices. ICT awareness includes browsing or surfing, designing or authoring, communication to teaching and maintenance or hardware/software skills which are needed effective teaching (Gracious & Annaraja, 2011). As information and communication technologies (ICTs) permeate our societies and communities, the role of the individual

learner is highlighted. Globalization has produced outcomes and processes which make the competencies of paramount importance. Today it is no longer enough to have the same living and working skills one had five years ago (Rani, 2014).

Multimedia is the combination of various digital media types i.e. images, sound, video, text. They compile an integrated multi-sensory interactive application to present the information to an audience (Neo and Neo, 2001). According to Agnew, Kellerman and Meyer (1996) multimedia means “an individual or a small group using a computer to interact with information that is represented in several media, by repeatedly selecting what to see and hear next”.

Using multimedia in education results in the increasing productivity and retention rates, because people remember 20% of what they see, 40% of what they see and hear, but about 75% of what they see and hear and do simultaneously.

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It means, by using multimedia tools we can create a learning environment, where the communication of the information can be done in a more effective manner and it can be an effective instructional medium for delivering information. With multimedia technologies students create multimedia applications as part of their required project. This makes them active in developing their own learning process, instead of just being passive learners of the educational content (Neo and Neo, 2001).

Multimedia application design offers new insights into the learning process, and gives possibilities to represent information and knowledge in a new and innovative way. But technology alone will not result in higher achievement. The ideal classroom for the 21st Century calls for an amount collaboration, conscious design and technological innovation to make the classroom into a place of positive learning environment.

ICT Trends in Education

ICTs make curriculum implementation learner-centred with a self-learning environment that enables the students to customize their own learning experiences. The use of ICT should be encouraged in investigation and development of appropriate ICT solutions, deployment of ICT, maintenance and support of ICT, ICT literacy and ICT integration (Tiwari,2014). In view of ICT, education can be classified in following main categories:

- e-Learning through internet.
- ICT Education through Mobile.
- ICT Education through Distance Mode.
- ICT Education through Free Open Source Software.

Building an Ideal Classroom for the 21st Century

Within the confines of the project of the future classroom it must be built from an ordinary classroom, which is an ideal one for teachers and students as well. First of all we must decide what makes a classroom an ideal classroom of the future. In the first phase we defined some main, basic factors as (1) mobility, (2) home-like atmosphere, (3) fostering learning environment, (4) the latest multimedia tools, which can foster teaching and learning. In the second phase we had to decide how to rearrange and rebuild the room, which wall should be the main one, where later the board would go and where the plugs should be located. In the third main phase we had to organize

the blue color workers, to choose and order the multimedia tools. In the fourth main phase we had to build and set up the whole multimedia system, to install the PC-s, the interactive white board, to register every tool on the router, to install the projector.

Electricity

It follows from this that the first step to rearrange the classroom wiring. The electrician installs plugs in every half a meter along the longer wall in height of half meter from the floor, built outlet for the projector close to the ceiling and built some outlets close to the place where we plan to put the interactive white board. It have to solve the charging of the computers (notebooks, UM PC-s, tablet PC). So we plan several plugs installed along side one of the longest walls. We plan a special build-in cupboard in a cleft in the wall. We also install several plugs behind this cupboard. To these outlets belongs a main switch, which makes possible to switch off the power in the outlets behind the cupboard, to avoid the breakdown of the chargers under permanent charging.

Colors

In most of the cases faculties, prefer classrooms which wall color is "institutional" white. But white walls do not help to reduce tension and anxiety and do not produce a home-like atmosphere. However, there exists an empirical evidence of the human reaction to colors. Colors best suit for classrooms promote a sense of well-being and reduce agitation (Nuhfer,2004), which means that wall colors are important factors to design an appropriate learning environment. Studies about students' reactions and motivations in connection with different wall colors point out that there are colors which foster learning. The consensus of these studies is that light yellow-orange, which promote cheerful, lively and sociable moods is desirable in a classroom or beige, blue-green can also be good choices for covering three of the four wall surfaces (Nuhfer, 2004). Greens or blue-greens in pastels are relaxing and they well fit into a learning environment where tasks require concentration. If we want to design the most motivating interior, it is not enough to have the same colors on all of the walls. The fourth wall, the front of the room must be different from the rest of the walls, it must be complementary or at least have a darker shade than that of the other walls. The different color at the front helps to

reduce the students' eyestrain as they look up and down while working on computers or write notes (Mahnke, 1996).

Mobile Furniture

One of the most important factors of designing a perfect classroom is the good selection of furniture. We want to have such tables and chairs, which allow for an easy and quick rearrangement of the room for different types of learning (frontal teaching, individualized learning, pair study or group work). Therefore, we design mobile furniture, which means tables mount on wheels and rolling chairs, which makes possible to reach the desire rearrangement of the furniture within three minutes. 20 trapezium-shaped tables make possible to higher the variability of the sitting order. In the back of the classroom we design a place with 3 comfortable chairs and a round table.

It is the place where students can watch and analyze the lesson and consult separately with the teacher. We also have to solve the problem of storage and charging the computers in a safe place. By designing the cupboard, we have to keep in mind that (1) the air circulation of electronically tools is important, (2) charging the computers must be solved, (3) to make sure that an average-sized person is able to reach the location where the computers are. The cupboard is divided into four parts. It has a part with a fixed and 15 telescopic trays, where altogether 30 notebooks, their chargers and the router take place. It has a part with 15 small trays, where the PC-s and the other accessories (projector's remote control, whiteboard pens, web cameras etc.) can be store. On the remaining two parts the bigger multimedia tools are situate. The back of the cupboard is open and behind the trays there is a free space, where there is good air-circulation for the computers.

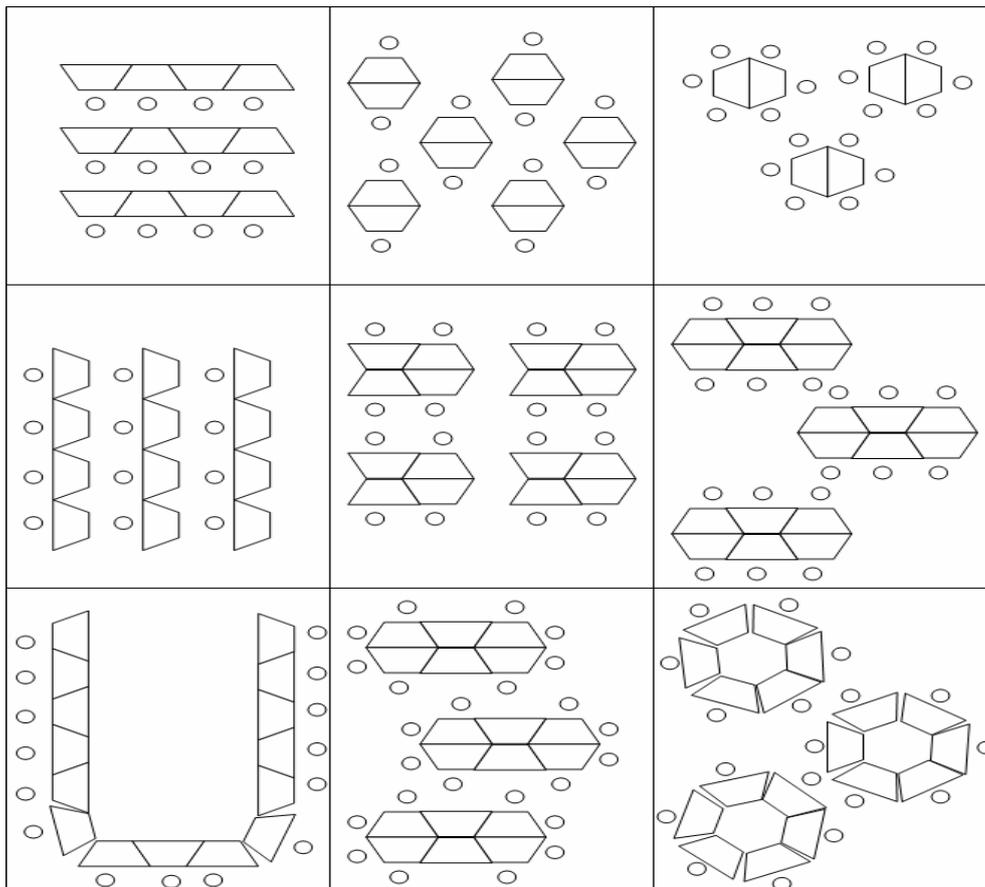


Figure: Some Possibilities of Sitting Order

Whiteboards

We prefer whiteboards to blackboards. On one hand, the reason for this is that the classroom is equipped with electronic gear and computers. The use of chalk for blackboards produces chalk dust over time that settles over the circuits, causes overheating, and ruins vulnerable equipment. On the other hand, interactive whiteboards fit better into a learning environment, where innovative teaching and learning with multimedia tools is inevitable. Interactive whiteboard helps teachers to structure their lessons, supports collaborative learning, can help to develop student's cognitive skills, enables ICT use to be more integrated into classroom, allows text and images to be moved around the board and/or changed, and finally allows work to be saved or to be printed out (Gage, 2006). From the wide variety of interactive white boards we decide to choose a durable, easy-to-use electronic whiteboard that inspires students and teachers to turn lessons into interactive experience. The board is installed with the Inter Write software and has a pen that also functions as a mouse. If somebody prefers blackboard to whiteboard, one can change the surface color of the board in interactive mode and can work on the table as if it would be a blackboard with a chalk.

Wireless Technology and Multimedia

The classroom of the future promotes not only a sense of well-being and produces a home-like atmosphere and its interior is technically well equipped and design for effective learning as well. Mobility was among the main factors to choose the technical tools. Mobility means on one hand wireless technology, on the other hand mobile electrical tools. Multimedia laptops with wifi are mobile solutions for teachers and students. The wireless network allows students to have access to computing networks and the Internet. The access to online resources encourages students' critical thinking and problem solving ability, discussion and collaboration while using real world data and primary source resources to make the content authentic. With the help of the Radmin software (Remote Control Software helps a lot in solving real-time and the actual problems users are facing) the teacher is able to follow the students' work on their computers, the teacher can see what they do, which site they are looking for on the Internet, etc. Moreover the teacher can send individual messages to each student and can decide if he or she allows to the student to answer this remark. The teacher can decide which student's or students' (up to 4) screen(s) should

appear on the board. Besides wireless technology, the touch surfaces of the write PCs (tablet PC and ultra mobile PCs) bring more interactivity into the classroom's work and redefine the ways of teaching and learning. Teachers are able to walk around the classroom while they are writing on the tablet PC, which screen appears promptly on the board. Digital cameras record Microteaching sessions and different project works with the new ICT tools.

Conclusion

Students in teacher education get the best feedback on their teaching and have access to learning tools that put the most important skills in the 21st century within reach. Students may learn and practice in different multimedia learning environments, and learn and teach different teaching methods i.e. e-problem-based learning, collaborative learning. Flexible furniture and technology also create a perfect environment for students to obtain the skills they will need in real-life knowledge-based digital world. As to conclude, the classroom of the future gives effective tools for students and teachers, and prepares students to enter and successfully compete in the ever-expanding high-tech global marketplace.

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