Review Article

Informatics technology in the classroom

Introduction

Today, technologies are used to help students to learn, and have been an important area in education for many years. In the past, students participate and learn by listening to the teacher's lecture, raising their hands to answer questions or working independently on some written assignment. This happened because students were just repeating what the teacher said to them and not using creative thinking. Many times technology is placed too far from the classroom and much of the hardware is too old to handle the new software applications. Older schools find it difficult to meet the student needs in writing when students use telecommunication.[1]

One of the problems identified within classroom education is the inability of teachers to effectively manage classroom behavior which often contributes to the low achievement of at-risk students and to their excessive referrals for special education.[2] Today, technology can help facilitate the knowledge-constructed classroom. Students were assigned to create brochures, power point presentations, and use video cameras along with movies. In educational communications, information or knowledge is encoded visually or verbally in the symbolic systems that are enabled by various technologies.

Informatics technology includes the acquisition, processing, storage and dissemination of vocal, pictorial, textual, and numerical information by a microelectronics-base combination of computing and telecommunications. Negroponie[3] argue that digital technology can enable students to become more active and independent learners. The internet allows new "knowledge-building communities" in which children and adults from around the world can collaborate and learn from each other. Computers will allow students to take charge of their own learning through direct exploration, expression, and experience. This shifts the student's role from "being taught" to "learning" and the teacher's role from "expert" to "collaborator" or "guide".

Informatics technology is very important in education. There are several major reasons for the widespread attention focused on technology in education today. Some reasons are the importance of unresolved issues about educational technology to virtually all members of society, the enormous financial investments being made in educational technology around and the often vehement disagreements that exist about the value and impact of technology in education that exist in both the popular press and the educational research literature.

Informatics technology can bring exciting curricula based on real-world problems into the classroom, and provide scaffolds and tools to enhance learning. The interactivity of technologies is cited as a key feature that enables students to receive feedback on their performance, test and reflect on their ideas, and revise their understanding. Informatics technology in the classroom can offer positive things to students such as to conduct research projects, analyze data, solve problems, design products, and assess their own work. In addition, this can encourage student to be active learning and communicate high expectations. On the other hand, informatics technology has disadvantages such as the technology is expensive for the students, they may have trouble in connecting to the internet, or something happens to the technology.[4] Reeves said that "With respect

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to technology and to education, people want to know whether various new technologies are more effective for teaching and learning than more traditional classroom approaches, whether some technology is more motivating than others and whether technology can allow students to share their knowledge representations with".

This paper addresses "Informatics technology in the classroom", so it can explore and define more of the relationship between informatics technology and the classroom especially how the teachers use this technology to their students. The goal of this paper is to provide recommendations related to teacher quality and effectiveness in informatics technology in the classroom. Then from the use of informatics technology, students can develop interests and motivation to become active, develop critical thinking skills and inquiring attitudes, and be stimulated to pursue knowledge on their own. Finally, the student in the world can more actively because of informatics technology.

Literature search

A search of the literature reveals that informatics technology is widely used in education and in the communication between teachers and students**.** Informatics technology is a tool that facilitates teacher and student to learn new things so that the learning process can be run effectively. Informatics technology is becoming the fastest, most efficient, and most effective way for education to provide knowledge to students and teachers.

Education

With all of this technology, student develop their ability to use the tools for supporting social constructivism in the classroom-not only through the real time interaction amongst classmates around the technology, but those synchronous and asynchronous interactions that occur virtually with classmates and other peer learners. As teachers continue to explore and expand the use of this technology, the educational community as a whole will grow its collective body of knowledge of best practices with students.[5] Technology brings about changes to the classroom roles and organization. It allows the students to become more self-reliant. Students may use peer coaching, and teachers may function more as facilitators than lectures.[6]

Simulation

As technology has improves, so has the quality of simulation developed for education. Simulation does a great job of helping learners to visualize and conceptualize complex phenomena. For

simulation to be effective instructionally in the classroom, students, like most instructional tools, need guided facilitation from the teacher.[6] The beauty of simulations is that they create learning opportunities and experiences that might otherwise never be able to be created in the traditional classroom-learning experiences that are authentic models of real world situations, allowing for strong transfer of understanding to real world situations.[6] Simulations can be produced in all fields through computer games, role plays, or building models, to name only a few. Simulation makes imitated situations available to the learner to practice and hone necessary skills, rather than having them jump right into the real experience (Access Technologies Group, 2006). With the use of informatics technology, such as animation and sound, the experience can be personalized. The learner can be rewarded when they make a correct decision, and brought back to a previous lesson if they make a mistake and need to review previously addressed material.

Discussion

Informatics technology in the classroom can be seen in two ways, from the viewpoint of teachers and students. From the teachers' perspective, Klopter[6] stated that to fully integrate technology, teachers must overcome doubts about technology as their classrooms begin to change, and use technology to support practice, use appropriate technology, and be prepared to develop all new learning environments utilizing technology as a flexible tool. From the students' perspective, Klopter[6] said that students are producing more work faster, are more active engaged in learning and have highly evolved technology skills and can learn on their own. The students have grown up with technology and teachers have to learn. There are barriers that student face, such as students' reported problems with hardware, software, and computer viruses with both personally owned and university equipment, lack of institutional support for operating systems, their instructors' ability to use course management systems and other applications, and students lack of computer skills. These barriers can impact the application of informatics technology in the classroom.

Some research suggests that the impact of technology on education has the potential in a beneficial way if done appropriately. Research in the classroom[7] documents that some teachers are beginning to use technology to change pedagogy and curriculums. For example, in many countries, the use of educational technology is part of an instructional shift toward constructivist approaches to teaching and learning within a context of school improvement or reform.[8]

In Indonesia, informatics technology in the classroom can develop depending on facilities in the school and the ability of the teachers to can improve and apply technology. The ability of teachers to organize classrooms and manage the behavior of their students is critical to achieving positive educational outcomes. Informatics technology still challenges for students and teachers in the learning process, but with using informatics technology, students can create new things in new ways, learn new things in new ways, and communicate in new ways with new people behavior that have hardwired in their ways of thinking and operating in the world.[6]

Conclusion

Technologies are the tools that allow students to share their knowledge representations with others. Unfortunately, it is common to confound the meanings of media and technology in education. In the broadest sense, cognitive tools refer to technologies that enhance the cognitive powers of human beings during thinking, problem-solving, and learning. It is inevitable to implement informatics technology in order to design an education system that enriches the variety of learning opportunities for students and is developed through the use of informatics technology. It has been observed that the use of informatics technology not only encourages or supports the student and teachers in term of education, but also informatics technology motivate students in a positive ways.

As the use of informatics technology becomes widespread in schools, students will have equal opportunities to access informatics technology. In this respect, although it is more costly and troublesome compared to classical methods, it is suggested that it can or will be preferable due to its positive contribution to education.[9] A recommendation for implementation of informatics technology in the classroom is to provide basic training to teachers who will use the technology in the class and to perform student assessments. Therefore, teachers are beginning to use informatics technology in the classroom, and students are working together in teams and using informatics technology tools and resources to search for information, publish result, and create products. Finally, another recommendation is to use technology as an effective instructional tool, as training and time are needed for teachers to infuse technology into their curriculum. Technology could be used to make learning more efficient (enable students to learn faster), more economical (save costs), and more equitable (increase access for those with special needs).

Acknowledgements

Conflict of interest

The author declares no conflict of interest.

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