

THE ROLE OF EFFECTIVE USE OF ICT FOR EDUCATION, WITH REGARD TO THE TEACHING LEARNING PROCESS

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This paper begins with a description of the penetration of ICT into the education field. It examines the social aspects of learning environments using ICT, with emphasize on the contribution of ICT to quality in teaching and learning. The improvement in quality teaching and learning followed by ICT integration, is then presented with reference to cognition, pedagogies, convergence, alignment, data, and culture. Finally, useful indicators, and different models to evaluate the effectiveness of ICT in teaching are presented. With view to the future, new technological trends with significant to the education field are being discussed.

Keywords: *ICT penetration, ICT learning environments, quality teaching, quality learning, effective ICT integration, evaluation of ICT integration.*

ROLUL UTILIZĂRII EFICIENTE A TEHNOLOGIILOR INFORMAȚIONALE ÎN PROCESUL EDUCAȚIONAL DE PREDARE-ÎNVĂȚARE

În lucrare este descris procesul de penetrare a TIC în domeniul educației. Sunt analizate aspectele sociale ale mediilor de învățare cu ajutorul TIC, cu accent pe contribuția TIC la calitatea procesului de predare-învățare-evaluare. Este prezentată contribuția TIC la procesul de cunoaștere, avantajele pedagogilor, convergența, alinierea, evidența datelor și cultura informațională. În cele din urmă, sunt analizați indicatorii de utilitate și diferite modele de evaluare a eficacității TIC în procesul de predare. Sunt puse în dezbatere tendințele tehnologice de perspectivă, semnificative pentru domeniul educației.

Cuvinte-cheie: *penetrare TIC, mediu informațional de învățare, calitatea predării, calitatea învățării, integrare eficientă a TIC, evaluarea integrării TIC.*

The penetration of ICT into education

Education is a socially intended activity. Quality education has traditionally been associated with teachers having high levels of personal contact with learners. In contrast, the use of ICT in education is a more student-centered process. Therefore, with the world of education currently undergoing a massive change as a result of the digital revolution, the role of ICT in education is becoming more and more important. These new technologies create learning opportunities that challenge traditional schools [2].

According to UNESCO [13] information and communication technology (ICT) may be regarded as a combination of 'informatics technology' with other related technology, specifically communication technology. ICTs have the potential to innovate, accelerate, enrich, and deepen skills, to motivate and engage students, to help relate school experience to work practices, create economic viability for future workers, as well as strengthening teaching and helping schools change [3, 7].

Collins & Halverson [2] claim that the central challenge is whether current schools will be able to adapt and integrate the new power of technology-driven learning, for the next generation of public schooling. They call educators and policy makers to rethink education apart from schooling, warning that schools which are unsuccessful in integrating new technologies will eventually dissolve the long identification of schooling with education into a world where wealthier students pursue their learning outside of the public school.

Few educational researchers criticize the non-connected learning to the complex reality, and the reality of teaching the facts of life, as something closed and defined which cannot be appealed and re-investigated [11]. Koren (in [6]) believes that opening the door to innovation ICT and technology, still requires face to face dialogue. This is not an educational revolution that occurs, but an evolutionary process of continuity between the old and the new pedagogies carried out by a tool named ICT. He concludes claiming that the critical factor for success in school is the teachers and the human relationships they build at school, while the computer is only a means to achieve pedagogical goals. The recognition of the school in the use of ICT to help pedagogical purposes is its guarantee to success.

Social aspects of learning environments using ICT

Prensky [10] coined the term "digital natives" in 2001, distinguishing them from "digital immigrants". The first born or behave as if they were born into the age of the Internet, and the other came to the Internet and the

digital world only after they acquired habits and customs that characterized the culture prior to the digital age (Davidson, in [6]). Davidson indicates that one thing that will not change is the need of human beings for communication with each other, the desire of people to be listened to, and the importance of social and emotional aspects of meaningful learning. Creating connections between students and their acquaintance through dialogue in a social informal context seems important and contributes to improve collaborative learning. Social presence is an important antecedent to collaboration and critical discourse because it facilitates achieving cognitive objectives by instigating, sustaining, and supporting critical thinking in a community of learners [5].

Neal [8] notes that in a constructivist environment, the use of ICT promotes student autonomy whilst also providing opportunities to work collaboratively with others. Shears (in [8]) explains that the relationships between teachers and students are more interactive and guiding, rather than a relationship where information is transferred from teacher to student. The critical factor in supporting effective learning with ICT according to Neal [8] is to focus on the way it is integrated into the classroom. He identifies learning culture, social wellbeing, motivation & engagement, and thinking & learning, as key factors that influence and shape effective learning.

Levin (in [6]) adds that the computer networking discourse can help the pedagogical guide, but cannot replace the human teacher whose presence is essential to the learning process and cannot be a substitute for face to face dialogue.

The contribution of ICT to quality in teaching and learning

Dellit [4] presents six aspects of improvement in which ICT can contribute to quality in teaching and learning: **Cognition, Pedagogies, Convergence, Alignment, Data, and Culture.**

By presenting the contribution of ICTs to qualitatively improve the teaching-learning process, Dellit [51, p.64] highlights an important entity mainly responsible for making it practicable: the educators, which she calls to "...take up the challenge and hard work of adaptation and change required, if we are to develop both ICTs in education and the profession in its use of them."

Moreover, Scrimshaw [12] claims that much of the reviewed literature appears to be concerned with evaluating the contribution of ICT to "student centered" teaching and learning, while Gibson (in [12]) observes that the majority of teachers tend to prefer to use a variety of "teacher centered" model. Ertmer et al. (in [12]) identified three levels of teachers' computer use:

1. As a supplement to the curriculum.
2. As a reinforcement or enrichment to the curriculum.
3. As a facilitator for an emerging curriculum.

In suggesting strategies for supporting teacher development in the use of ICT, Scrimshaw [12] divides them into two main areas: school-based and externally supported strategies, which will be discussed later.

How to evaluate the effectiveness of ICT in teaching

Paiano [9] claims that since the use of ICT does not automatically improve the quality of teaching and learning, it is necessary to constantly evaluate how effective the use of ICT in the classroom really is. PISA has shown that evaluation creates a high level of responsibility among teachers and students which in turn produces better results. According to Paiano [9]. Teaching and learning processes which use ICT should therefore be subject to evaluation.

BECTA (British Educational Communication and Technology Agency) [1] presents five useful indicators which help decide whether ICT is of benefit to teaching and learning or not:

1. ICT is of little effect if used in a traditional teaching environment.
2. The teacher plays a vital role in making ICT effective, and must be a facilitator who sets out clear didactic objectives.
3. ICT works best in a collaborative classroom where problem solving is involved.
4. ICT works when it is used regularly and in many subjects.
5. The users of ICT must believe in it, especially the teacher.

Paiano [9] describes five models for evaluating ICT integration in the teaching-learning process: **(1) Techno-constructivist, (2) Techno/subject-centered, (3) Proto-technological, (4) Techno-traditional, (5) Technocratic.**

Conclusion

In this essay, I presented the potential of ICT in education and the challenges to adapt and integrate it into the teaching-learning process. I also examined the implementation of ICT and its learning environments fo-

cusing on the social aspects. The contribution of ICT to quality in teaching and learning was viewed, and different ways to evaluate the effectiveness of integrating ICT in teaching was examined.

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Prezentat la 15.10.2013