



Effective ICT Integration in the teaching–learning process

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Abstract

Information and communication technologies (ICT) present a wide range of hardware and software that can be used in the teaching and learning processes. These technological innovations have modernized schools and provided classrooms with laptops, interactive boards, multimedia tools... etc. They are powerful means in presenting or disseminating information in different ways. This paper intends to answer pertinent questions related to the importance of ICT in education and their challenges. It emphasizes the utilization of some software and hardware and how they would improve the quality of education among which teachers' roles holds an important position. It tackles the complexity in deciding upon why, when and how to integrate what technologies in the classroom.

Information and Communication Technologies (ICT) present a wide range of hardware and software that can be used in the teaching and learning process. These technological innovations have modernized schools and changed the look of classrooms with laptops, interactive boards, multimedia tools... etc. As Suryani (2010: 106) maintains, these technological innovations have brought the education sector from the dark age to the light age. They are powerful means in presenting or disseminating information in diverse ways. The use of ICT within classrooms varies from those classrooms limited to using word processing, presentation software, interactive games and activities and internet surfing, to those where students and teachers have become ICT experts working cooperatively to produce knowledge. What is more, ICT-based learning allows for more flexibility in space, time, and content (Devanandan, 2018).

Obviously, these many positive effects brought about by the integration of ICT in schools are accompanied by many limitations and challenges that hamper the on-going process. Studies based on the dichotomy of ICT based-instruction vs. non-ICT environment raise many debatable issues. On the one hand, some claim that the computer is something unique and special which would duplicate teachers' work and may replace them in the near future. Although, its role is manifested in alleviating their workload inside and outside classrooms, teachers' roles are more complex to determine **why, when, how** and **what** technologies to integrate in the classroom.

In addition to modernizing schools, a number of objectives should be taken into consideration when integrating ICT in the learning-teaching process. To begin with, ICT seeks to equip and update schools so as to provide students with skills and competencies to use such technology in the workplace once they leave school. It aims at "reducing bureaucracy by providing and exchanging information in elec-

tronic form, reducing the teachers' workload and organizing their work perfectly" (Lee, 2000). The internet, for example, provides a wide range of resources, as it serves four basic types of tools in education, namely e-learning, tools for enquiry, communication and presentation. This helps, for example, in solving the problem of accessibility to education through bringing education services closer to people who cannot attend schools or benefit from the educational instructions.

ICT helps create a quality learning environment to support the effectiveness and efficiency of teaching. "ICT can empower researchers and supervisors to make significant contributions to the knowledge base of 'how to' of learning and learning contributions" (Devanandan, 2018:10). The software available for education would help teachers foster and assist in the development of meaningful educational activities to engage more students. For example, "courseware (a set of software) can be used with an entire class as a homework assignment or provided to special individuals for enrichment or remediation" (Finocchairo, 1999: 149). Other software offer the possibility to create new lessons. Teachers can, for example, create and elaborate a cross word puzzle in a short time¹. In fact, various software are used to design authoring shells or preprogrammed procedures that help teachers create games, exercises and so many other types of classroom activities without learning its language. They can organize, analyze, synthesize and evaluate data related to students' attendance, performances and grades in Databases applications.

Furthermore, ICT facilitates language teaching. Video tapes or interactive videodisc programs; for example, are helpful in the teaching of listening comprehension activities. The use of interactive audio program allows students to create dialogues and to practice them with other students. Word processor, PDF, e-book,

1- Puzzle generation is a higher-level thinking activity which can become the basis for testing, reviewing or practicing in various subject areas.

talking books are a small portion of a vast number of software used to practice reading and writing. The computer provides multiple choices of tasks to automatically evaluate and gauge students' work. Such tasks include but are not limited to the ordering and organization of words and paragraphs, fill-in-the-blank, multiple-choice and true/false questions. Besides, computer-assisted testing provides a more comprehensive, fast and accurate way of testing and evaluating students' performances and achievements whether by institutions, teachers or students themselves.

Students' attainment and attendance increase through the integration of ICT. They become more practical. Their behavior and school attendance as well as their attitudes towards school increase. These technologies provide opportunities to acquire information in different ways, and make learning more interesting for students, and enhance positive motivational impacts on specific learning activities such as:

Engagement (the visual and kinesthetic forms of the ICT are engaging pupils to greater extents). Research (the ability to search and select from a much wider range of resources including those which are more visually based, and more interactive in nature). Writing and editing (the ICT offers pupils ways to commit ideas more readily and widely and enables editing to far greater extents than was possible on paper). Presentation (ICT enables pupils to present work well, no matter what limitations are placed on this by paper and hand methods). (Passey, Rogers, Machell and McHugh, 2004: 26)

Students and teachers enjoy computer's varied tools, interactions and feedback. They become active learners. They enjoy working more and become easily engaged in doing activities when they are provided with instructions that match their intellectual levels, prior knowledge and individual needs (Lynch, Fawcett,

and Nicolson, 2000). They willingly respond to feedback and work harder to move on to higher stages of learning activities. They become self-regulated learners. In addition, ICT help reduce phenomena such as truancy and cheating.

The word processor, for instance, saves time and alleviates the workload for both teachers and learners. It motivates and engages students to write lengthy texts with correct spelling and convention. Finocchairo argues that it is used to facilitate putting “thoughts in papers, dealing with vocabulary, recognizing the ideas and polishing the products” (1989: 150). It checks misspelled words or incorrect sentences ... etc. Then the written work is printed and submitted to the teacher. The teacher’s comments and observations are put back to the word processor for retyping. This method of writing compositions saves time and energy for copying and recopying the whole composition at the time of revision. The word processor, nevertheless, doesn’t check for coherence and cohesion as two main features of textuality.

ICT has positive effect on behavior inside and outside schools. In lessons, students focus more and become less distracted, they are more committed to the learning task, feel more in control and are able to achieve more professional outputs (Passey et al. 2003). They are more dynamic and cooperative. However, the study reveals that “whether pupils’ behavior is better, worse or neutral” it depends on the teacher’s role’. Outside school, the use of internet and e-learning technologies, for example, “encourage more positive activities, longer engagement with school work, deeper and wider discussion with a broader group of friends, and sharing of emotions through chatting” (ibid.) In the same context, Uhomoibhi (2006: 9) states that e-learning allows students to get information faster from everywhere and anytime.

Although the objectives seem outstanding and motivating, the integration of ICT may produce new challenges and obstacles. Findings suggest that many of those advantages derived are still debatable in which they require a reviewing of both its extreme efficiency and the teacher's role to integrate such tools.

One of the overarching questions discussed is whether engaging in the activity using ICT is to enhance personal understanding and competence, or specifically to complete a task and pursue the opportunity to gain positive impacts about one's competence. Overall, does ICT enhance the learning goals or the performance approach goals?

Students with higher performance approach goals tend to use ICT simply to complete a task or win a game. They view success as making correct decisions. They can discern situations where they work harder to finish the stages or complete the tasks, but they don't know what and how to learn, or how to develop their skills. They may also lose many skills in accordance. For example, students addicted to word processing are bogged down with handwriting. They become lazier in memorizing the definitions of difficult words as they always carry their software dictionaries in their smartphones. They also degrade their logical/mathematical intelligence when using scientific calculators for extended periods. This exemplifies why "simply having more computers does not make much difference" (Moseley et al., 1999: 89).

Adventure games, for example, "are kind of simulations in which the student participates in a narrative task by making decisions that affect the plot" (Finocchiaro, 1989: 149). This type of games fosters and helps students construct appropriate responses in order to find out what happens next. There are also some other computer simulation programs that provide learners with various virtual situations such as purchasing, banking transactions, job interview ...etc. Students are

participating freely without getting embarrassed of committing mistakes. In many cases, using games and simulations bring about many positive outcomes; however, “serious-minded students who would react against traditional language games in the classroom will react negatively to computer games” (ibid.: 150).

Empirical evidence indicate that ICT can assist students to learn and teachers to teach more effectively and efficiently, but there are many issues that should be tackled if such technology is going to make a difference. A preliminary survey for a Teacher Training Agency Study in England (Moseley et., al 1999) reports that more effective teachers (and more effective schools) tend to use more innovative approaches or tend to use the resources that they had more effectively. It also states that ICT alone will not raise attainment, but rather that “teachers can raise levels of pupils’ attainment when they use ICT to support teaching in literacy and numeracy” (6). Teachers are responsible of what they communicate. In her study on “Effects of Technology Integration Education on the Attitudes of Teachers and Students,” Christensen (2002) argues that positive teacher perception, enjoyment and enthusiasm towards ICTs will boost students’ positive attitudes towards computers.

Although the study made on ‘The Motivational Effect of ICT on Pupils’ (Passey et al. 2004) reveals that ‘the forms of motivation which arose as a result of ICT use were concerned with commitment to learn more than with a mere completion of tasks or to gain a competitive edge’, they emphasize that students need an appropriate direction, support and guidance from teachers to increase their learning attainment. Thus, ICT integration would have positive impacts and influences if it is targeted at specific areas of learning, with a clear rationale for its use from a broad research based on ICT and education.

Another debatable issue regarding the integration of ICT is computer's interaction and feedback. In her book *English as a second/foreign language*, Finocchairo stresses the significant role computers play in the teaching/learning process. The computer –in her words– is patient and non-judgmental and, as such, puts the most or vary language learner at ease (148). Usually, ICT's feedback is designed to address individual students, it respects their learning pace and provides simple, accepted and enthusiastic ones. Some technologies supply immediate feedback which is designated as built-in feedback mechanism; it detects, analyzes, guides and helps students to correct errors/mistakes. The feedback ranges from scoring correct answers, reacting emotionally to achieved or failed stages, underlying misspelled word, etc. to providing a list of websites returned from a search engine. Feedback is so diverse to the extent that many attributes of human feedback is used and adopted by the computer. Accordingly, one can clearly believe that there is an intention to replace teacher's responses inside the classroom.

ICT's feedback makes a significant impact on teaching and learning. Text-to-speech feedback in a word processor or interactive storybook can improve early reading (Lewin, 2000). Voice input and text feedback can also improve student's reading and writing (Miles, M. Martin, D! and Owen, J., 1998). Still, teacher's monitoring of the computer's feedback is necessary to ensure that students are learning what they are supposed to learn, because (1) feedback can be misinterpreted or misused by students; (2) computers are machines that manipulate data according to a set of instructions, they can't generate feedback themselves; (3) computer programs design specific feedback without putting into account age differences, student's personality, motivation, specific goal, learning styles, learner's intelligences, learner's specific difficulties, etc., (4) computers don't offer formative feedback that might help students to identify where, when and how they could improve; and

(5) there must be someone who supervises and guides every stage in the learner's development, and that someone is certainly the teacher.

Integrating ICT in the teaching-learning process proves that the workload of teachers is being reduced, and teacher-student communication is increasing. However, some challenges arise in relation to both teachers and the technology used.

Sometimes ICT integration is slow probably because of teachers' resistance to align curriculum with innovative technologies or fear of the derived pressures it creates. There are many reasons why teachers prefer to stick to old approaches rather than risking new adventures. Teachers sometimes do not realize the real meaning and the significant impact, and they question the real benefits in light of the cost of time and money. Too many ideas and possibilities often overwhelm and make it difficult to choose where to start from.

Other main challenges come from the lack of teachers' training and the lack of equipment. Teachers sometimes complain about having short time for learning and planning, as well as for implementing it in the classroom. The curriculum itself doesn't allow for any addition as it is too loaded with lessons. The study conducted by Christensen reveals that "teachers who reported having received computer integration education tended to exhibit more positive attitudes toward information technology than their non-integration counterparts" (2002: 425). Some teachers are afraid of the unexpected; they do not want to feel that their students know more than they do, and they do not want to get bogged down because of any hardware or software malfunctions. Some teachers are afraid to damage the equipment. They cannot neither provide each student with a computer nor can they locate the computers in the classroom.

All in all, ICT has positive impacts as well as other negative impacts on the teaching-learning process. Many questions arise when dealing with the manner of

ICT use in teaching such as 'how can ICT be effectively used to improve student's learning?' and 'should teachers integrate ICT with other approaches?' These two questions deal with the role of teachers. Teachers must act differently when utilizing such technology in their teaching process. They should reflect on their use of ICT as it sometimes changes the predictions.

Facilitator, supporter, guide, creator and researcher are some of the major roles teachers should adopt when utilizing ICT. Accordingly, they should target specific areas. They should plan and structure how to integrate ICT effectively to achieve more teaching and learning efficiency.

Enough knowledge of computers is of a paramount importance. Teachers need to train themselves to work with any technological device and prepare themselves for the unexpected malfunction. They would share their experiences with others; they could also use others' ideas to get started, yet they ought to pay attention to the context as it will never fit right perfectly. Any utilization of ICT should be for an objective and not just for the sake of using such technology. In addition, students are guided to use computers with specific measurable objectives.

The integration of ICT in traditional classrooms helps increase the quality of the students' performances and achievements. However, teachers would better realize that ICTs and textbooks are only resources; they are not supposed to drive the curriculum. They should be eclectic and critically evaluate the credibility and cultural appropriateness of such software.

To conclude, ICT would not replace teachers, at least for the time being. However, teachers are no longer the only disseminators of knowledge or information. They need to adopt changing perceptions and attitudes of their methods of teaching. They should be updated through using different technologies and innovations. They also need to learn and maintain an open mind to change the concept

of teacher education and to establish a correct outlook on education and qualified teachers. Nowadays, they are sharing dozens of lesson plans and discussions about their failures and successes. Teachers are becoming program designers. The courseware tools provide teachers with the opportunity to design and develop curriculum for themselves and for others. As there are many materials provided, teachers should decide on appropriate materials and modify them to meet their learners' needs. Moreover, they need to be researchers themselves and look for new information and methods of teaching. They need to be updated as learners may bring many unexpected objects and materials.

Recommendations:

This article suggests some major recommendations:

Teacher-student relationship should be developed and updated.

Schools ICT equipment should be accessible to all students and teachers.

ICT is an opportunity to change the perception about school and education in general.

Teachers should play new roles.

It is necessary to foster administration staff, teachers and students training in the field of technology.

References:

Christensen, R. (June 2002). "Effects of Technology Integration Education on the Attitudes of Teachers and their Students", *Journal of Research on Technology in Education*. ISTE, US & Canada, 411433-.

Devanandan, L. (2018) ICT Embedded Education and Research: A Hand Guide for Teachers and Researchers. 1st Edition. Norton Press. McNichols Raod, Cherpet Chennai.

Finocchairo, Mary (1989) English as a second/foreign language: From theory to practice. 4th edition. Pretice Hall Regents. Englewood Cliffs, New Jersey.

Lee, Kuang-wu "English Teachers' Barriers to the Use of Computer-assisted Language Learning" Johnny [at] hcu.edu.tw, Hsuan Chuang University (Hsinchu, Taiwan) The Internet TESL Journal, 6 (12), December 2000, <http://iteslj.org/Articles/Lee-CALLbarriers.html>

Lewin, C. (2000) Exploring the effects of talking books software in UK primary classrooms, *Journal of Research in Reading*, 23(2), 149- 157

Lynch, L., Fawcett, A.J. and Nicolson, R.I (2000) Computer-assisted reading intervention in secondary school: An evaluation study, *British Journal Educational Technology* 31(4), 333-348.

Miles, M., Martin, D. and Owen, J. (1998). A pilot study into the effects of using voice dictation software with secondary dyslexic pupils. Exeter: Devon Education Authority: occasional paper.

Moseley, D. et al (1999). Ways Forward with ICT: Effective Pedagogy Using Information and Communication Technology in Literacy and Numeracy in Primary Schools, Education Line. University of Newcastle <http://www.leeds.ac.uk/educol/documents/00001369.htm>

Passy, D., Rogers, C., Machell, J. and McHugh, G. (2004) 'The Motivational Effect Of ICT On Pupils', Department Of Educational Research Lancaster University. http://downloads01.smarttech.com/media/research/international_research/uk/lancaster_report.pdf

Suryani, A. (2010) "ICT in Education: its Benefits, Difficulties and Organizational Development Issues." *Jurnal Sosial Humaniora*, 3 (1), Jun 2010, 106123-.

Uhomoibhi, J. (2006). "Implementing e-learning in Northern Ireland: Prospects and challenges." *Campus-Wide Information Systems*, 23 (1), 414-.