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Factors to consider in the adoption of the computer as a teaching and learning aid in an inclusive classrooms situation

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Abstract

This conceptual paper assesses the value of computers in an inclusive classroom situation. The paper gives both advantages and disadvantages of computers in inclusive classrooms. The paper argues that for effectiveness computer use in inclusive classrooms needs teacher guidance. Otherwise without guidance student with disabilities may not benefit from the espoused benefits of computers in an inclusive classroom situation. Thus the paper concludes that while computers can be a valuable tool, there are disadvantages to inclusion of these technological devices into a classroom. Originally, without the Internet in existence, computers mainly were used to provide lessons, give quizzes and keep records of progress. This kept the teacher firmly in control of the use of computers and they made up a small portion of the day of each class. With the discovery of the Internet the teacher is losing control of computer use in classrooms. The paper puts it clearly that a successful inclusion of pupils with special needs depends largely on the availability of resources in the mainstream classroom and on the way teachers differentiate the resources between pupils.

Key words: computers, teaching, learning, in inclusive classroom, adoption, Internet., special needs

1. Introduction

Almost every office or school has a computer of some kind these days. It may seem at first that having a computer brings only benefits, but further consideration shows that it also has disadvantages. First of all computers are very useful at school. They help students with disabilities to revise for examinations and make subjects more interesting. Pupils can also learn new vocabulary and grammatical structures. Furthermore they allow students to become familiar with operating a computer and gain basic computer skills. In addition to this storing information on a computer disk is one of the most efficient ways of keeping data. One computer disk can hold the same amount of information as several books. Moreover people can communicate with other computer owners through the Internet. And so on, and so on. On the other hand, however, students would spend all of their time playing games on the computer rather than using it for educational purpose. If children are sitting in front of the screen all day, they do not learn to share, wait their turn, or even something as simple as manners. Moreover children might be using the internet to access pornographic material. Children are also easy target for sexual offenders who chat online with them and then make plans to meet them or slowly filter information about them. Also frequent and prolonged computer session may pose physical health problems.

This paper looks at the advantages and disadvantages of using computers in a classroom situation. The paper starts by defining a computer before looking at advantages and disadvantages of using computers in classrooms. The last part of the paper looks at the way forward as far as computers are concerned in the classroom situation.

2. What is a computer and how is it used in an inclusive classroom?

A computer is an electronic device operating under the control of instructions stored in its own memory, that can accept data, process the data according to specified rules, produce results, and store the results for future use (Shelly, Cashman and Waggoner, 1990). Parsons and Oja (2000) define a computer as a device that accepts data, processes data, stores data, and produces information. Pfaffenberger and Daley (2004) also see a computer as a machine that performs four basic functions: input, processing, output and storage. Thus a computer is an electronic machine that has memory, mass storage, processor, input and output devices.

Teaching pupils with special needs in the inclusive classroom no doubt deviates from the 'regular' programme. Teachers are confronted with the question of how to instruct these pupils. Pupils with special needs may require more instruction time or other learning methods and professional knowledge. In that case, teachers will feel the need for more time, materials and knowledge. Generally, this can be achieved in two ways: by an increase in resources or by re-arranging available resources. Increasing available time e.g. through the use of educational assistants or enhancing teachers' professional knowledge e.g. consultation teams are ways of increasing the necessary resources for inclusive education, but teachers may also need to rearrange available resources across the pupils in the classroom. Teachers can, for example, encourage above average pupils to work more independently, to work with computers and to help each other, so that more teaching time is left for pupils with special needs. To realize the inclusion of these pupils in mainstream education, teachers will try to enhance the level of resources and differentiate between pupils with respect to the amount and type of resources available to them. The idea is that a successful inclusion of pupils with special needs depend largely on the availability of resources in the mainstream classroom and on the way teachers differentiate the resources between pupils.

3. Advantages of using a computer in an inclusive classroom situation

Perhaps the most important characteristic of computers is speed. When data, instructions, and information flow along electronic circuits in a computer, they travel at incredibly fast speeds. Many computers process billions or trillions of operations in a single second Pfaffenberger and Daley (2004). Processing involves computing (e.g., adding, subtracting), sorting (e.g., alpha betizing), organising, displaying images, recording audio, playing music, and showing a movie or video (Ting, 2009). Small computer systems like calculators have thus proven to be of great value in mathematics and accounting classroom sessions and examinations thereof.

Computers have a high degree of consistency and reliability. Given the same input and processes, a computer will produce the same results — consistently (http://www.ehow.com/about_4607245_disadvantages-computers-classroom.html),. A computing phrase known as garbage in, garbage out points out that the accuracy of a computer's output depends on the accuracy of the input. For example, if you do not use the flash on a digital camera when indoors, the resulting pictures that are displayed on the computer screen may be unusable because they are too dark. The electronic components in modern computers are dependable and reliable because they rarely break or fail. Using the very same example of calculators above it has been established that students make fewer calculation errors when using electronic gadgets than when they make their calculations manually.

A computer has also the advantage of storage capacity. A computer can transfer data quickly from storage to memory, process it, and then store it again for future use. Many computers store enormous amounts of data and make this data available for processing anytime it is needed (Shelly, Cashman and Waggoner, 1990). Data like good articles, exercises and notes can be kept in the computer, and are readily accessible by students and teachers. Ting (2009) poses the question: with the latest introduction of a terabyte storage disk, imagine how many articles, exercises and notes can be stored! And how many students will benefit from it?

According to Hollowell (2013), computers also have the advantage of communications. Most computers today can communicate with other computers, often wirelessly. Computers with this capability can share any of the four information processing cycle operations — input, process, output, and storage — with another computer or a user. This is especially so when they are connected to the internet. The technology available today has made a wealth of knowledge available to students, which offers great potential for the speed and style of learning. Information is presented in so many ways that any type of learner, whether gifted or disabled, can find and use the necessary material.

Computers provide for individualised learning (Jimoh, 2010). The computer has now been found to be the most suitable, and versatile medium for individualised learning because of its immense capacity as a data processor, using for different games for the children. And can perform numerous mathematical and logical operations without any intervention by men. Computer as an instructional material is used in many ways for effective instructional delivery, such as mass instruction, group learning, individualised instructions, and computer conferencing system among others. Jimoh (2010) acknowledges three broad ways by which computer contributed to teaching and learning situations, and these are mass instruction, individualised instruction and group learning.

4. Disadvantages of using a computer in an incluve classroom situation

While computers can be a valuable tool, there are disadvantages to integrating these technological devices into a classroom. As we have already seen above, computers offer convenience and allow students to create polished products, but with these advantages come potential problems that could lead to decreased educational effectiveness within a classroom and allow for problems down the line in the child's schooling. Some of these problems are discussed below.

When computers and other technological tools are used constantly, students develop a dependence upon these tools (Ema and Ajayi, 2004). Just as pupils who are never required to do math without a calculator lose the ability to solve math problems manually, students who use computers for nearly every activity experience a decline in their ability to spell and even write by hand. Students must practice these simple skills without technological tools regularly to ensure that their skills do not atrophy.

Jimoh (2010) observes that computers present an added challenge to educators because teachers must deal with students of varying computer literacy levels, especially in developing countries with limited exposure to computers like in Zimbabwe. Some students enter the classroom fully versed in the applications of a computer, while others come with no prior experience. It is difficult for teachers to deal with this vast difference and ensure that they provide students who need assistance with that assistance while not requiring capable students to slow their academic progress and wait.

As observed by Jimoh (2010), while cheating is hardly a new phenomenon, computers make academic dishonesty even easier for students to perpetrate. Students who wish to plagiarise can simply copy and paste information into their reports, and those who wish to share answers to tests or assignment questions can transmit those answers digitally. This added ease of cheating may incline more students to attempt academic dishonesty.

While computer games are just as, if not more, engaging than board or card games, they do not afford the same degree of player interaction (Ema and Ajayi, 2004). Many computer games are individual pursuits. When students complete these digital games and activities they miss out on the interaction practice that they receive through the playing of traditional games.

The use of computers opens students to potential dangers (Ema and Ajayi, 2004). Students can fall victim to Internet predators or become the target of cyber-bullying while on the Internet. Many parents elect to closely monitor their children's Internet usage at home, but at school keeping a close eye on all students simultaneously can be difficult. When computers are used in school, teachers must be vigilant in their monitoring of student activity to ensure that they do not become entangled in a dangerous situation.

Prolonged or improper computer use can lead to injuries or disorders of the hands, wrists, elbows, eyes, neck, and back (Ema and Ajayi, 2004). Computer users can protect themselves from these health risks through proper workplace design, good posture while at the computer, and appropriately spaced work breaks. Two behavioural health risks are computer addiction and technology overload. Computer addiction occurs when someone becomes obsessed with using a computer. Individuals suffering from technology overload feel distressed when deprived of computers and mobile devices. Once recognised, both computer addiction and technology overload are treatable dis orders.

Computer use in classrooms also cut down on personal interaction (Bolick, Berson, Coutts, and Heinecke, 2003). Children today are used to communicating with friends and strangers online through websites such as MySpace and Facebook. This is far more common than dealing with each other face to face in real life. The same is true in the classroom. While students have their eyes focused on computer screens, they do not look around themselves to interact with their fellow students or their teachers. While many teachers still feel uncomfortable using technology in their teaching practice, it is also likely that teachers feel new technologies are unproven in the classroom (Royer, 2002). Though there has been a great deal of research on the efficacy of technology tools for teaching and learning, many of these studies may not translate well to the reality of the classroom (Wallace, Blase, Fixsen, & Naoom, 2007). According to the stages of implementation discussed in the companion Research in Brief article, schools may find themselves stuck in a series of initial implementation efforts, trying one thing after another, and not achieving full implementation of a program. Even high-quality training, if used in isolation, is not sufficient to lead to full-scale implementation of technology; for true technology integration, teachers need to do more than simply learn about a new technology tool (Wallace et al., 2007).

If inclusive classrooms want teachers to use computers to enhance student learning, then it is important to address these issues. Teachers are inundated with new initiatives every year; new ideas come and go and are rarely sustainable (Zorfass, 2001). To avoid frustration schools must focus not only on introducing computers, but also on implementing and scaling up new technologies.

While every school is different, with different needs and resources, there are several factors that facilitate computer implementation and can help address the challenges mentioned above, making your school's change efforts more successful. Research on educational interventions (Abbot, Greenwood, Buzhardt, & Tapia, 2006; Billig, Sherry, & Havelock, 2005; Blumenfeld, 2000; Ely, 1990; Elmore, 1996; Ertmer, 2005; Glazer, Hannafin, & Song, 2005; Price et al., 2002; Royer, 2002; Staples, Pugach, & Himes, 2005; Zorfass, 2001) has shown the following factors to be instrumental in implementing school-wide change:

- Professional development
- Leadership
- Organization and school structure
- Resources and support

Factors that facilitate implementation of computer use in an inclusive classroom will play a role in every stage of the intervention. While certain factors may be more important during certain stages, each factor is a necessary component of an effective intervention in the use of computers in an inclusive classroom.

5. Conclusion

From the very good, well-researched material that previously might be available only in a library and only if students knew how to look for it, to total misinformation espoused by anyone with a website, the Internet had it all. This is where one of the problems with computers in the classroom comes from. Books have editors. They decide what to print, check the facts and try to present truthful books. The Internet has no editor. Any query on Google will bring millions of results, some of it factual, some of it not. Students, without guidance, may not know the difference. Thus while computers can be a valuable tool, there are disadvantages to integrating these technological devices into a classroom. Originally, without the Internet in existence, computers mainly were used to provide lessons, give quizzes and keep records of progress. This kept the teacher firmly in control of the use

of computers and they made up a small portion of the day of each class (http://www.ehow.com/about_4607245_disadvantages-computers-classroom.html, accessed 14 May 2013).

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