

Using ict in science education essay example

[Technology](#), [Development](#)



ICT or otherwise known as Information and Communication Technologies are forms of technological advancements that provide the user an access to wide array of information through telecommunications. It is synonymous to Information Technology, but the primary focus of ICT is the utilization of communication driven technologies. A few examples of ICT's are wireless networks, cell phones, internet and other forms of communication platforms. The emergence of new technologies paved the way for communication and interaction to occur in real time. This breakthrough opened several opportunities for creative experience and help create learning environments in science education. Loveless (2003) argued that ICT plays a crucial role in creating spaces in primary curriculum in which learners uses ICT as a tool and a medium for higher engagement with creative learning. Wishart (2010) added that the importance of ICT to UK schools commends a wide range of creative learning processes that aids school science departments in performing experiments.

The use of ICT in science education is similar to the integration of Augmented Reality (AR) in school curricula to help create an effective learning environment. Middle schools for example are using a type of virtual environment that aims to duplicate the natural environment through a computer simulation in honing literacy in Math (O'Shea et al., 2009). Researchers and scientists are looking into greater possibilities of applying AR modalities to help engage students in learning and understanding. AR creates an effective learning environment by means of engaging students to interact with both physical and virtual objects, environment and people to amplify the student's learning capacity (O'Shea et al., 2009). For example, a

student may use a handheld device that walks them through a map of Washington DC, after arriving to the Lincoln Memorial, the guiding map simulation will point them to an access point where more information about the location can be accessed.

ICT works the same way as AR, although the main platform of instruction encompasses the utilization of communication driven technologies.

McFarlane and Sakellariou (2002) wrote that ICT's role in education is not homogenous, but rather provides an increasing number of tools used to manipulate data and gain access to a wide variety of contents. Eadie (2001) on the other hand argued that the involvement of ICT in science enables the student to directly expose themselves to expert sources when they need to experience the sights and sounds of interactive learning. Using ICT at schools was effective in such a way that its attributions changed the student's behavior. Various intellectual skills were further developed such as problem solving, reasoning and creativity. Specificity of what has been learned were broadened and deepened due to the use of technologies (Eadie, 2001). In addition, students also demonstrated greater spontaneity when it comes to showing interest in the learning activities.

Furthermore, Eadie (2001) also emphasized that the time and learning devotion to activities have significantly increased when the students are constantly using ICT during the learning process. The ease of accessing information also helped the students to develop research skills, which is detrimental to science. McFarlane and Sakellariou (2002) presented a current model of ICT integration in school science developed in 1990 as an investigative approach to science teaching in UK curricula. The ICT-based

model is being used to enhance the scientific investigations through virtual alternatives as opposed to practical work. The integration of the model offered simulation support to explorations through computerized representation of the phenomena being studied (McFarlane and Sakellariou, 2002). The effectiveness of ICT at science schools in terms of aiding scientific investigations is demonstrated by the difference on how students achieve their objectives. Practical work only allows the students to see what is happening, but does not actually see why it happened (McFarlane and Sakellariou, 2002). However, ICT, its tools and curricula models allowed students to observed the phenomena as it occurs and was able to comprehend the context of the investigation because of the simulations. However, the ICT approach also has its downsides and problems. Vodopivec and Samec (2012) discussed the dangers and disadvantages of using ICT. First, ICT usage threatens the student's socio-cultural development. According to the study by Plowman, McPake and Stephen (as quoted from Vodopivec and Samec, 2012), ICT endanger the student's social development by spending less time in physical activities and are most of the time isolated from. The second problem described by the author is the student's lack of cognitive development derived from practical learning practices, which hones critical thinking. ICT offers resources and tools that can be used to easily access information that are crucial to the learning process. In return, the ease of access limits the student's capacity to develop critical thinking skills (Carnoy, 2004).

Despite the disadvantages, ICT still presents a promising future for education. Liking ICT and its innovations with activities within the various

learning themes enables the student to develop coherent learning episodes (Luckin et al., 2012). In addition, the integration of ICT reinforces and strengthens the future of learning by aiding the students to establish more creative approach. Furthermore, technologies in education environment build and disseminate actual pedagogy and successful practices, which means a forward trend in exploratory use of structured forms (Osborne and Hennessy, 2006). In addition, the approach becomes more feasible as the teachers obtain more experience in integrating their teaching with ICT. In general, ICT is fostering active participation of students most particularly in practical work and research (Osborne and Hennessy, 2006). Desirable goals can be achieved due to the availability of technologically driven materials that provide opportunities for more engaging learning activities and innovative teachers practicing interactive approach.

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