# Uses of ICT in schools

There is a range of uses for ICT in schools, both educational and administrative. Administrative uses fall outside the scope of this document, and are not discussed further. Specific educational uses include:

• Development of a broad set of information literacy and related skills. The umbrella term information literacy describes the ability to access and manage information, evaluate information using critical thinking skills as well as collaboration and communication skills;

• Using the Internet to gather information for research and projects, and for educator resources and learning support materials;

• Using specialist educational software for specific curriculum objectives;

• Using basic ICT applications to enhance teaching and learning, developing computer literacy skills in the process;

• Facilitating communication to support a range of communication strategies amongst educators and learners across the globe and within the school;

• ICT-related learning areas, such asn Information Technology or similar subjects.

Depending on how ICT is used, it can support different learning philosophies. The decision to use ICT in and of itself does not necessarily promote a particular learning approach. The philosophy and pedagogical framework must drive the use of computers in education and not the other way around. The educator must decide what is required under different circumstances and make the appropriate decisions. ICT is used to the best advantage of learning when it is exploited as a tool to enhance the learning experience, along with innovative teaching and learning strategies.

ICT can be used to support teaching and learning in a variety of ways, but it is only a tool and its use needs to be carefully mediated. In order to use ICT optimally for teaching and learning, there must be clarity on its uses as well as limitations. ICT will not address all educational problems. When used appropriately, however, it can greatly enhance the learning environment.

**Using the Internet to gather information**

ICT provides a platform through which a wide range of information can be gathered and used to improve teaching and learning. The Worldwide Web (the Web) in particular offers a huge variety of information, which can be used to enhance teaching and learning. The advantages of the web include the provision of immediately updated information as well as visual, sound and other features that enhance the understanding of concepts. The Internet can serve as a resource to develop essential information skills for learners and educators. However there are challenges that need to be recognized. The Internet provides access to so much information that search skills must be developed in users. It also provides access to a range of unsuitable information and therefore requires careful management and well-developed information skills in both educators and learners.

**Research and projects**

Educators can set research and project-based activities for learners. Learners have access to a wealth of information for project-based learning and can acquire unique information processing skills through the Internet. The ability to find, appropriately select, use and apply information represents a high level of skills. These skills meet critical learning outcomes, are a basic necessity for tertiary studies and are sought after in the workplace.

While the Internet offers great learning opportunities, it can result in poor learning processes and outcomes if used inappropriately. The Internet provides learners with access to updated information and creates dynamic and context based learning environments. However the Internet also lends itself to large-scale plagiarism and the use of factually incorrect information from inappropriate sites. It is critical that learners develop skills to process, select and adapt information to suit their requirements. Of particular importance is the educator’s role in carefully designing tasks, which ensure that learners do not plagiarise or simply copy and paste chunks of content from the Internet. Learners should also be encouraged to distinguish between fact and opinion sites and to use higher order information skills.

There is a range of ethical issues around the use of the Internet. Educators should guide learners with regard to the ethical use of the Internet. This should include educating learners with respect to referencing and acknowledging sources as well as educating learners about unsuitable or inappropriate sites such as sites containing pornography and violence. Empowering learners and educators to select appropriate sites with an understanding of the ethical issues is valuable, but does not preclude installing software to censor or block access to particular sites.

**Educators develop activities using online resources**

The Internet offers educators a vast number of resources to improve and supplement their lesson planning and classroom activity. Examples of what is available include lesson plans, worksheets, suggestions for real-life contexts and applications, video and sound clips, discussion forums with educators around the world, access to expert advice and input, and an ever increasing wealth of resources that are innovative and exciting.

**Using Educational Software**

Specialist educational software (as distinguished from productivity software such as standard office applications) can be used to support learning and teaching, in particular for mastery of facts and basic skills. This is referred to as computer aided instruction and comprises mostly drill and practice type materials, used to enhance basic skills, facts and basic concepts. One of the more popular uses of computer-aided instruction is to provide repetitive drill opportunities for mastery of certain facts and processes that have already been taught.

There is a place for this kind of software, especially where learners need practice opportunities and where remedial needs are high. This gives learners an opportunity to practice at their own time and pace, potentially interacting with the software in a language and expertise level of their choice. In addition the use of this type of software does not require a high level of ICT skills but it can be very beneficial to learners’ understanding of fundamental concepts.

There are typically limitations to such software, which must be taken into account when using it in the classroom:

* Software cannot replace the educator, since it is more appropriate for reinforcement than actual concept development. In fact, this software is most effectively used in the presence of a teacher;
* Most of the software packages are developed outside of the framework of a reformed curriculum and would need careful adaptation or management;
* Many of the software packages are developed internationally and may not be suitable to the local curriculum and context;
* Commercial software requires potentially expensive once-off or recurring licenses;
* The use of this type of software often requires large numbers of computers where work is individualized and requires one computer per learner.
* All these factors must be weighed up against the educational needs and values when using specialist software.

Sometimes specialist software is erroneously used to teach concepts or to replace a textbook. Educational software can only be effective when it is well managed and supported by effective teaching. Identification, evaluation and procurement of software to suit the needs of educators and learners are crucial and must be done through an analysis and weighing up of needs, cost and quality of software.

**Computer Literacy**

Computer Literacy often describes the skills required to use generic ICT applications, such as word-processors and spreadsheets. These are often taught as stand-alone skills. The drawback of teaching computer literacy isolated from any context is that learners soon forget skills learnt if they do not have regular access to the technology and if skills are not learnt in an authentic context. There is limited educational scope in this use because learning is mechanistic and possibly irrelevant. Learners require contextualized learning.

Modern learning theories recognize the importance of linking learning to real-world situations to which the learner can relate. The immediate contexts for learning are found in the classroom, institution, community and nation. Training of ICT skills in isolation of a meaningful context is not encouraged. Learners and educators working with ICT will find that skills are acquired in the context of their work. Appropriate skills should be taught only when such authentic needs arise. For this reason, acquisition of ICT skills should take place in the broader learning context as far as possible.

Basic ICT applications should be taught in the context of subject teaching. This approach uses the educational context to develop basic ICT skills. It is responsive to the educators’ needs and models the use of ICT to enhance teaching and learning rather than being the focus of the learning. Experience shows that this approach to computer literacy is more suitable and relevant for educators than the normal ‘commercial’ training context, which is irrelevant to educators and learners.

Basic ICT applications include word processing, spreadsheets and presentation software, which can be taught as they are integrated with curriculum outcomes. Educators can use them as planning tools and assessment tools as well as for content and skill development: for example using spreadsheets to learn trigonometry, or using word processing software to improve writing skills.

**Facilitating communication**

ICT can be used to support a range of communication strategies amongst educators and learners across the globe and within the school.

Communication using e-mail is an extremely useful tool to promote and develop a collaborative environment in which learners and educators can interact. Educators can exchange ideas about their work, share lessons and receive support from their colleagues. Learners can collaborate on projects and learn about other people, countries and cultures. Communicating through e-mail promotes discussion, increases sharing and collaboration and increases writing and reading activities.

In addition to the customary practice of interaction and cultural exchange via e-pals, educators may structure curriculum-related lessons in collaboration with educators in distant or nearby schools. These can lead to increased understanding of content when studied and shared with others. This methodology embraces social constructivism. At advanced levels e-mail collaboration for project-based learning can facilitate the engagement of learners and educators in international projects.

E-mail usage can be part of formal lessons where learners write to others discussing, summarizing or debating issues. It is also part of an informal network of communication that can be introduced and fostered between learners and educators. Learners and educators must be provided with the basic e-mail skills and accepted norms and ethics of using e-mail.

**Information Technology as a subject**

We refer here to the practice of creating a specialist subject focusing on the technology and the design of systems. This typically requires a dedicated computer laboratory and scheduling and staffing within the school program. The introduction of these subjects may therefore discourage the development of ICT integration by educators of other subjects, unless sufficient computers are available in more than one venue to provide for both specialist and general use.

Typically, Information Technology (or similar) is a subject that is offered to a relatively small sample of the school population, especially those who wish to pursue careers as IT professionals. ICT integration, on the other hand, exposes the entire school population to a range of useful ICT and information literacy skills, while enhancing their learning experience and a range of lifelong learning skills such as independent learning, team work and problem solving.”

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