

# Chapter 1

## INTRODUCTION

Computers have become a part of everyday life. They have taken an important position in our lives and probably will continue to do so in future. It is not a question of whether computers should be used in teaching, but rather how. In today's society, it is irresponsible not to expose learners to computers. We have to prepare learners for the life in which computers will play a very important role.

Computers have an important role to play in the classroom, just as they have in many other areas of daily life. They can, for example, be effectively used to demonstrate a concept or technique in class by means of an appropriate computer software package. But the instructor has to acquire the necessary software package and the knowledge of its use. In order to make a decision on which software package to acquire, the instructor requires a description of how a package can be used in the classroom and how effective it is likely to be. Information on usage can be obtained from individual distributors, but information on how to successfully implement it in the classroom is not so easy to come by. A compilation and classification of available software packages and how they can be used would thus be of valuable use. One of the aims of this dissertation is to make a contribution in this direction.

In this dissertation, instructors refer to both teachers at secondary schools and lecturers at colleges and universities. Learners refer to students at secondary schools, colleges and universities.

Computers can be used in many ways in the classroom. They can, for example,

be used to teach, facilitate the study of traditional content-area topics, provide opportunities for learning how to use technology in a mathematical content or to supply learners with general purpose tools for performing academic tasks more efficiently. According to Grabe [12, p12], "these distinctions are similar to what is called the tutor, tool and tutee model". A computer application could be designed specifically to teach learners in the role of a tutor. Computer programmes are then directly responsible for instruction. More general-purpose applications, such as word processing, are designed to help learners function more productively in the role of a tool. They make academic tasks such as writing and calculating easier. When functioning in the tutee role, learners instruct computers by writing programmes. Discussion in this dissertation will be based on the computer being used as a tutor.

Not all instructors are in favour of using computer software packages and such instructors are quick to mention disadvantages. Some of these opinions are influenced by prejudices and fears and are not always objective. Similarly, other instructors are so much in favour of using software packages that they are reluctant to admit that there are disadvantages. It is true that advantages and disadvantages are valid, but it is probably also true that the advantages outweigh the disadvantages. Computers are more appropriate for some uses than others, and are more suited to some teaching styles than others.

In the second chapter, we will list some of the advantages and disadvantages of the use of computers in the classroom for both instructors and learners. We will construct a classification of packages according to the style of teaching they provide in the third chapter. Each category supports a different classroom strategy. This categorical identification will help to illustrate the point that not every strategy is supported by every software package. Instructors need different software packages to accomplish different objectives associated with a given curriculum. No single software package can address all classroom needs.

Classifying software packages by category of use is a step towards learning how to apply the right package to a given task. The first category consists of those

packages that can be used when the instructor is in control of the class. This is followed by categories of problem-solving packages, graphical packages, tutorial packages, drill and practice packages, game packages, computer algebra systems and of simulation packages. We list a number of available software packages for each of these categories and give a short description of each and the level at which they are suitable. A more detailed description of some of the software packages is given in the appendix. We also discuss the way in which each category of packages can be integrated into the teaching process as well as advantages and disadvantages to both instructors and learners.

Integrating computers into the teaching process means using the power and ability of the computer to aid learning. Instructors must identify what the learning goals and objectives are and then identify the appropriate software packages which could assist them to accomplish these goals. This sounds simple, but in practice it is considerably more difficult to achieve. Decisions on what to do, how to do it, and the task of convincing other instructors to do it can be formidable. Integrating computers into the teaching involves change. It changes the ecology of the school and affects funding, teaching methodology, curricula and timetables to name but a few changes. This integration does not refer to computer literacy or computer awareness. It refers to using the computer where it is the best medium to support learning goals. The entire school community of learners, parents, instructors and administrators have to accept that computers are part of everyday school life.

Before integrating computers into the teaching process, instructors must introduce chosen computer programmes to learners. Learners need a demonstration and hands-on instruction to make them feel comfortable and to develop the motivation for tackling assignments that require a software package. Towards this end, instructors could prepare instructional handouts explaining key features of the programme. Instructional videos could also be used when it is desirable for learners to learn independently.

One should keep in mind when introducing a new software package, that it may be necessary to have a thorough knowledge of the four stages of instruction



similar to when introducing a new topic in class. Grabe [12, p79] suggests that, “these stages are: presentation of information, initial guidance as the learner struggles to understand the information, extended practice to provide fluency, and the assessment of the learner’s learning”. These stages are intended as a general description of components of instruction, and are not specific to instruction delivered using a computer software package. However, awareness of these stages of instruction can be used to identify and differentiate purposes of different categories of software packages. Awareness of these stages can enable instructors to integrate a particular software package into the teaching process at the right time.