## CONTENTS

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction to IT and CAT education</td>
<td>1</td>
</tr>
<tr>
<td>E.A. Breed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Lesson planning</td>
<td>19</td>
</tr>
<tr>
<td>C.P. Serfontein and E.A. Breed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Lesson Presentation in IT and CAT</td>
<td>59</td>
</tr>
<tr>
<td>E.A. Breed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Assessment in IT and CAT</td>
<td>77</td>
</tr>
<tr>
<td>U. Wassermann</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Teaching Problem-solving</td>
<td>97</td>
</tr>
<tr>
<td>E. Mentz, E.A. Breed, and M. Havenga</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Cooperative Learning in IT and CAT Classes</td>
<td>125</td>
</tr>
<tr>
<td>E. Mentz and L. Goosen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Teaching and Learning Programming</td>
<td>155</td>
</tr>
<tr>
<td>H.M. Havenga</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Teaching and Learning Theoretical Content</td>
<td>173</td>
</tr>
<tr>
<td>L. Goosen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Learning and teaching support materials in IT and CAT classes</td>
<td>189</td>
</tr>
<tr>
<td>E. Mentz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>The design and management of a computer laboratory</td>
<td>207</td>
</tr>
<tr>
<td>U. Wassermann &amp; E. Mentz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Teaching of keyboarding in the IT/CAT laboratory</td>
<td>229</td>
</tr>
<tr>
<td>E.E.S. Lubbe</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CONTRIBUTORS</td>
<td>241</td>
</tr>
</tbody>
</table>
CHAPTER 1
Introduction to IT and CAT education

E.A. Breed

OBJECTIVES

After completing this chapter, you should be able to:

- demonstrate knowledge and understanding of IT/CAT as part of the school curriculum;
- demonstrate knowledge and understanding of the nature and purpose of IT/CAT;
- understand and know the important concepts pertaining to a school subject curriculum;
- demonstrate knowledge and understanding of the typical successful IT/CAT learner and teacher; and
- critically evaluate each of the above mentioned aspects and formulate your own opinion on each of them.
1.1 INTRODUCTION

In this chapter the nature of Information Technology (IT) and Computer Applications Technology (CAT), as well as the purpose and aims of these subjects as they are presented at school-level, are discussed. Since the purpose and aims serve as guidelines for teaching the subject, it is essential that the IT/CAT teacher should have the necessary knowledge of the national curriculum regarding these subjects and a sound understanding of the teaching-learning that should take place in the IT/CAT classroom in order to ensure that these objectives can be attained.

1.2 THE NATURE OF IT AND CAT AS SCHOOL SUBJECTS

Computer-related disciplines, in general, can be divided into three main categories. While some disciplines are particularly concerned with the acquisition of programming skills, others are more concerned with using computer applications effectively, while the third group deals with more technical aspects, such as hardware and networks. Since IT and CAT differ a great deal in terms of their practical components, their nature as school subjects will be examined and discussed separately.

1.2.1 Information Technology

IT is described as originating from and being a subset of the broader knowledge domain of information and communication technologies (ICTs), which is “the combination of networks, hardware and software and the means of communication, collaboration and engagement that enable the processing, management and exchange of data, information and knowledge” (DOE 2008b). IT as a school subject consequently addresses a wide spectrum of knowledge and skills as it consists of a practical and a theoretical component, which require different approaches regarding the teaching-learning of each of these components. IT thus “involves the integration of theory and practice as well as structured experiential learning which affords learners the opportunity to exercise and reinforce computer skills and knowledge acquired in the school and to provide orientation to further study in this field” (DOE 2003b).

The scope of IT as a school subject goes beyond the mere transformation of learners into programmers or application users or even technicians. IT as a school subject “is the study of the various interrelated physical and non-physical technologies used for the capturing of data, the processing of data into useful information and the management, presentation and dissemination of data. IT studies the activities that deal with the solution of problems through logical and computational thinking. It includes the physical and non-physical components for the electronic transmission, access, and manipulation of data and information” (DBE 2011b).

In 21st century life, the great demand for information processing and information communication makes it necessary for learners to be equipped with the skills to convert data into information and to be able to manage information effectively. The value of these information management skills, combined with the skills in programming, problem-solving and algorithm design done in Information
Technology, ultimately goes beyond the field of computers, in that learners are equipped to apply them in all areas of their lives. The degree of precision required for programming, the higher-order thinking skills and the creative work that is required, equip learners with skills that enable them to play a role in society as productive and competent human beings.

### 1.2.2 Computer Applications Technology

CAT as school subject is seen as a subset of the broader knowledge domain of information and communication technologies (ICTs). ICTs are “the combination of networks, hardware and software as well as the means of communication, collaboration and engagement that enable the processing, management and exchange of data, information and knowledge” (DBE 2011a).

Per definition CAT as a school subject is “the study of the integrated components of a computer system (hardware and software) and the practical techniques for their efficient use and application to solve everyday problems. The solutions to problems are designed, managed and processed via end-user applications and communicated using appropriate information and communication technologies (ICTs)” (DBE 2011a).

Computer Applications Technology is responsive to the developmental vision of the country, that all South Africans will be equipped with marketable skills to cope in an information society (DOE 2003a).

### ACTIVITY 1.1

Debate the following statement with regard to either IT or CAT:

“At school level the subject focuses on activities that deal with the solution of problems through logical thinking, information management and communication.”

Motivate your opinion of this statement.

### 1.3 THE INCLUSION OF IT AND CAT IN THE CURRICULUM FOR SA SCHOOLS

An important aspect of studying IT and/or CAT, and especially being a teacher of IT and/or CAT, is a clear understanding of why the subject is part of the school curriculum at all. At this level IT focuses on activities that deal with the solution of problems through logical and critical thinking, information management and information communication. IT also focuses on the development of computer applications by employing current development tools (DOE 2003b). CAT, on the other hand, at this level focuses on the effective use of information and communication technologies in an end-user
Introduction to IT and CAT education

computer applications environment in different sectors of society (DOE 2003a). In addition, both subjects foster awareness and an understanding of the social, economic and other implications of using computers.

The distinctly technological era in which we live means that the computer plays an ever-increasing role in our daily lives. Computers can be found wherever you go – in our homes, schools, businesses, hospitals, workplaces, and even in our cars. People can communicate via computers and gain access to information from all over the world. Owing to the digital revolution, technology keeps improving and infiltrates virtually all aspects of our daily existence. The exponential rate of change brought about by the computer at all levels of our lives is one of the aspects that necessitate the teaching-learning of IT and CAT at school level.

Considering that the purpose of education is to equip and prepare the learner for life, and to shape and develop the learner in order for him/her to become an independent, balanced adult who can play a role in society, IT and CAT thus are of paramount importance at school level. The knowledge, insight, understanding and skills, especially problem-solving skills, acquired by the learner through IT and/or CAT, should contribute to the development of competent citizens who are effective at all levels of society. Teachers should not only prepare learners for their future. We are also obliged to equip them with the relevant knowledge and skills that they need NOW. IT as a school subject enables learners to use information and communication technology (specifically computers) in social and economic applications, systems analysis, problem-solving, logical thinking, information management and communication (DOE 2003b). CAT, however, ensures that learners are able to make informed decisions when assessing, capturing and analysing data, manipulate, interpret and process information, apply problem-solving skills, use critical and creative thinking within the context of end-user computer applications, communicate effectively using different communication modes and tools, demonstrate effective management of information and engage in lifelong learning, effective job performance capabilities and jobs (DOE 2003a).

These subjects’ importance does not merely reside in the general use of computers in everyday life and in being competent citizens, but also in the career possibilities created for each learner through the presentation of the subject. The importance of training high-level computer experts to meet the urgent, global demand in this regard cannot be denied. IT or CAT at school level is the first step in this training process. IT specifically forms the underpinning basis for studies in computer science, information systems, engineering and the business sciences (DOE 2003b), while CAT ensures that learners can enter different career paths in a number of fields or apply these and related skills to create employment for themselves and for others (DOE 2003a).
ACTIVITY 1.2

Many countries abroad do not teach IT or CAT as a school subject, but only concentrate on computer literacy at school level. Briefly formulate and motivate your own point of view on the necessity for IT or CAT as a school subject.

1.4 DEPARTMENTAL POLICY DOCUMENTS

The implementation of IT and CAT as school subjects is guided by the national departmental policy documents concerning basic education. Since these documents may change from time to time it is of the utmost importance that the IT/CAT teacher obtains the latest version of the policy documents regarding the subject he/she is teaching. The teacher should study the documents thoroughly to ensure that they are implemented in a valid and reliable manner.

1.4.1 Aims of the policy documents

The policy documents of the national department concerned with education in the schooling sector represent policy statements for teaching and learning in South African schools. These documents usually comprise policy statements with respect to the content and assessment for each approved school subject, programme and promotion requirements, and a national protocol for assessment. Included in the documents regarding the content and assessment for each school subject, for example IT and CAT, one may find an explanation of the purpose of the curriculum, the principles it is based on, and the abilities of the learners it aims to produce. For the IT/CAT teacher one of the important aspects addressed in these documents is the description of the specific aims of the particular subject, in other words, what has to be achieved with the teaching-learning of IT/CAT. This aspect will be addressed in more detail later. Therefore, the aim of these documents is to prepare IT/CAT teachers for their task of the teaching, learning and assessment of IT/CAT.
ACTIVITY 1.3

Obtain a copy of the policy documents that are currently implemented with regard to the teaching-learning of IT or CAT as a school subject and identify the following:

- Purpose of the curriculum
- Principles the curriculum is based on
- Abilities of the learners it aims to produce

1.4.2 Achieving the purpose of IT and CAT

Achievement of the general aims of the curriculum necessitates contemplating how the teaching-learning of IT/CAT should be approached, while keeping in mind what the purpose of the specific subject is. The following sections provide some guidelines on how the purpose of IT/CAT can be achieved in light of the abilities that the curriculum aims to develop in learners.

1.4.2.1 Information Technology

IT as a school subject “will enable learners to understand the principles of computing through the use of current programming languages, hardware and software, and how these apply to their daily lives, to the world of work and to their communities” (DOE 2003b). The subject is designed to specifically develop learners’ higher-order thinking skills, technology skills, information skills, problem-solving skills, creative skills, collaborative skills and lifelong learning skills (DOE 2008b). According to the DOE (2003b), these objectives can be achieved by providing learners with opportunities to:

1. demonstrate an understanding of concepts, principles and knowledge of computers and computer applications in various disciplines;
2. demonstrate an understanding of how computers impact on the management of natural resources, cultural values, and socio-economic and human rights development;
3. critically analyse the impact of computers on ethical, social, economic and political relations;
4. work competently in a dynamic computer-using environment which includes:
   - effective communication,
   - problem-solving approaches,
   - teamwork,
   - responsible use of technology,
   - precision and accuracy;
5. demonstrate proficiency in the use of computers to manage and critically interpret information;
6. demonstrate how the creative uses of different computer technologies facilitate human interaction;
7. show proficiency in selecting and customising appropriate computer applications, hardware and media to provide and communicate innovative solutions across all sectors of society;
8. design and programme well-tested and user-friendly computer-based solutions to meet specific requirements; and
9. prepare for a career path, Higher Education and lifelong learning, thus enabling them to become effective members of a computer-using society.

1.4.2.2 Computer Applications Technology

The aim of CAT is to teach learners about ICTs, and to create the opportunity for learners to use ICTs in an end-user environment to solve problems that relate to the processing, presentation, and communication of information. In CAT learners are developing the following skills:

- **Technology skills:** the ability to use the facilities of technology in an end-user environment and operate it purposefully and effectively;
- **Information skills:** the ability to access, retrieve, store, organise, manipulate, evaluate, maintain, analyse, interpret, present and communicate information, as well as use ICTs to process information;
- **Problem-solving skills:** the application of an authentic methodology for solving problems in an irregular range of cases;
- **Creative skills:** the ability to design, develop and produce creative and elegant solutions;
- **Collaborative skills:** the ability to develop multifaceted and multi-levelled systems through collaborative teamwork; and
- **Lifelong learning skills:** the ability to achieve and maintain the knowledge, skills, values and attitudes required in a dynamic knowledge domain (DOE 2008a).

According to the DOE (2003a), CAT learners must be provided with opportunities that allow them to:

- make informed decisions when accessing, capturing and analysing data;
- manipulate, interpret and process information;
- apply problem-solving skills, using critical and creative thinking, within the context of end-user computer applications;
- acquire knowledge and skills that enhance the competency to interact with different end-user computer applications, e.g. word processing, spreadsheets and databases;
- develop a general idea and understanding of social, environmental and global issues that are linked to the use of information and communication technologies;
- communicate effectively by using the appropriate communication modes and tools;
- apply end-user computer applications knowledge and skills ethically and responsibly;
- demonstrate an understanding of the effective management of information;
- organise their daily activities responsibly and effectively within different contexts;
reveal natural talents and enthusiasm, thereby contributing to excellence and achievement;
- develop marketable skills, thereby enhancing capabilities and job satisfaction; and
- engage in life-long learning, effective job performance capabilities and job satisfaction.

1.4.3 Specific aims and content of IT and CAT as school subjects

As mentioned in 1.4.1, the policy documents regarding IT/CAT stipulate specific aims to be achieved with the teaching-learning thereof. These are meant to direct the teaching-learning of IT/CAT and ground the choice of content to be included in the subject. IT/CAT teachers should be familiar with these aims and how they relate to the prescribed content of the subject, as these have a direct influence on how the IT/CAT teacher plans work schedules and lessons. The compilation of work schedules will be outlined in 1.4.4, while lesson planning will be addressed in Chapter 2.

The policy documents also provide the weighting of the main topic areas of the content to be mastered in IT/CAT, as well as guidelines regarding time allocation to each of the topics per grade. IT/CAT teachers have to adhere to these guidelines when compiling work schedules.

**ACTIVITY 1.4**

Obtain a copy of the policy documents that are currently implemented with regard to the teaching-learning of IT or CAT as a school subject and identify the following:

a) Specific aims of IT/CAT
b) Main topic areas and sub-topics for IT/CAT
c) Weighting of the main topic areas
d) Approximate time allocation to the main topic areas

1.4.4 Important concepts pertaining to the teaching-learning of IT and CAT

In this textbook there are numerous definitions and descriptions of various concepts regarding the curriculum and the implementation of the curriculum and the teaching–learning of IT/CAT. Some of them are relevant now, while the others will be studied in detail in later chapters. For the meaningful use of this book, it is important to take notice of the following concepts:

**Teaching plan**

A teaching plan indicates the minimum content to be covered per term. The sequence of the content or topics listed per term is usually not prescribed, but it serves as an aid to help teachers to design their...
own work schedules. Suggested teaching plans might sometimes be provided in the policy documents regarding the teaching-learning of IT/CAT.

**Work schedule**

A work schedule for IT/CAT refers to the specific planning of teaching the content in appropriate sequence and pace per grade for a period of one year. Suggested work schedules might sometimes be provided by the Department of Education, but as the lengths of terms vary from year to year, and schools’ programmes differ from one another and from one year to the next, work schedules should be adapted accordingly on a year-to-year basis. The compilation of the work schedules for grades 10 to 12 remains the responsibility of the IT/CAT teacher(s) involved.

**Lesson plan**

A lesson plan for IT/CAT comprises daily, weekly, monthly or thematic planning. Therefore, a lesson plan should not necessarily be conducted per period, since the same theme or topic might be dealt with over a number of periods. The compilation of a lesson plan is the responsibility of the teacher(s) involved.

**Lesson objectives**

Lesson objectives for IT/CAT are statements which indicate what should be achieved as far as the teaching and learning of IT/CAT for the specific lesson is concerned. These outcomes describe the knowledge, skills and values that learners should have acquired upon completion of the lesson.

**Assessment**

Assessment is a continuous planned process of identifying, gathering and interpreting information on the performance of learners. Assessment will be examined and explained in further detail in Chapter 4.

**1.4.4.1 Suggested format of IT/CAT work schedules**

Grades 10, 11 and 12 each require their own IT/CAT work schedule. The purpose of such a schedule for a particular grade is to indicate the sequence of and pace at which the subject’s content and contexts will be presented in that grade in order to ensure that the intended learning objectives would have been achieved at the end of the year. Work schedules differ from teaching plans in that work schedules are specific in terms of assessment and learning and teaching support materials. It is the responsibility of the IT/CAT teachers for a specific grade to develop the year-long IT/CAT work schedule for that grade.

An IT/CAT work schedule should be a carefully prepared document that reflects what teaching, learning and assessment will take place in the 36 to 40 weeks of the school year. Serfontein (2009) suggested the following approach to develop a work schedule for a particular grade:

**STEP 1** **Package the content:** Study the prescribed content for the grade and the suggested teaching plan for the grade, and package it into topics according to natural and
authentic links. It is possible to package the content into such a level of detail that it could become the lesson topics for lesson planning.

**STEP 2  Sequence the content:** Determine the sequence in which you want to present the topics you have identified.

**STEP 3  Pace the content:** Determine how much time will be spent on each topic in accordance with the time allocation and weighting provided in the policy documents.

**STEP 4  Determine forms of assessment:** Identify the forms of assessment that will appropriately address each of the identified topics.

**STEP 5  Identify appropriate LTSMs:** Consider the LTSMs (resources) available to you and your learners, and identify for each topic the LTSMs that will appropriately address and support it.

Based on the above development process it is recommended that an IT/CAT work schedule should include the following:

- Available weeks in the school calendar for IT/CAT teaching, learning and assessment – numbered with starting dates. This will be used to sequence the presentation of the lesson topics.
- Time allocation for every lesson topic.
- Lesson topics – these are the result of packaging the content of the subject into topics according to natural and authentic links. It is recommended that the content is packaged into such a level of detail that the topics could become lesson topics.
- LTSM – this refers to the printed, Internet and other resources that will be used for every lesson topic. The textbook sections that will be used for each lesson topic must be indicated specifically.
- Assessment – the forms of assessment that will be used for every lesson topic. Also indicate where and when the specific assessment tasks are scheduled. It is important to provide for time that will be used for examinations.

### 1.5 PROFILE OF THE SUCCESSFUL IT/CAT LEARNER

There are no specific qualities and characteristics for being a successful IT/CAT learner. What we are trying to achieve here is to provide some of the most common qualities and characteristics that can be identified in successful IT/CAT learners. However, we do acknowledge that there are other determinants, such as the knowledge, skills and strategies of the teacher, which contribute to learners’ success. Furthermore, because of the difference in the nature of IT and CAT, it is obvious that there will be a difference in the profiles of the successful IT learner and the successful CAT learner.

#### 1.5.1 The successful IT learner

Keeping in mind the nature of IT (see 1.2.1) and the aims of IT as a school subject (see 1.4.3), the learner most likely to succeed in IT will be the one who, according to DOE (2008b), shows evidence of:

- sound communication skills in the language of teaching and learning;
- better than average abilities in Mathematics;
logical thinking skills;
problem-solving skills;
proficiency with and interest in technology; and
an aptitude for computers that goes beyond the use of applications and game playing.

The comprehensiveness of IT as a subject calls for rather a wide variety of abilities, skills and characteristics to ensure a successful learner in IT. These include:

- a preference for working with symbols (Wu, Dale, and Bethel 1998);
- a preference for structured and precise work (Teague 1998);
- the ability to think logically (Chmura 1998);
- the ability to arrange steps in the correct order (Chmura 1998);
- the ability to remember detail (Chmura 1998);
- the ability to visualise information (Chmura 1998);
- the ability to verbalise own thoughts (Chmura 1998);
- good abstract reasoning skills (Chmura 1998);
- good decision-making skills (Byrne and Lyons 2001);
- the ability to make conceptual presentations (Robins, Rountree, and Rountree 2003);
- the ability to analyse, synthesise and evaluate (Deek 1999);
- a well-structured domain knowledge (Deek 1999);
- syntactic, semantic and practical knowledge of the programming relevant language (Deek 1999);
- patience (Chmura 1998);
- determination (Chmura 1998);
- motivation (Chmura 1998);
- good working and study habits (Chmura 1998);
- the ability to plan, monitor and evaluate own progress (Gourgey 2001); and
- continuous reflection on both process and product (Fekete et al. 2000).

In an extensive study on the characteristics of successful programmers, Sterling and Brinthaupt (2003) identified criteria for individual and group programming settings. Shared criteria for both individual and group programming settings included being creative, conscientious and enjoys solving problems. Interpersonal cooperation skills were also important for group settings. Thus, having the ability to cooperate effectively is important for any successful programmer.

**1.5.2 The successful CAT learner**

In accordance with the nature of CAT (see 1.2.2) and with the aims of CAT as a school subject (see 1.4.4) in mind, the learner that will most likely succeed in CAT will be the one who, according to DOE (2008a), shows evidence of:
sound communication skills;
language proficiency;
fine motor skills;
logical and practical thinking skills;
creativity;
problem-solving skills;
visual literacy;
a willingness to learn and apply skills in different situations;
an ability to communicate and collaborate with others; and
a willingness to engage in lifelong learning.

Learners’ performance and success in IT/CAT is not determined only by their knowledge, cognitive and meta-cognitive skills. Some other determinants that may to some extent contribute to their performance and success include aspects such as personality traits, as well as their interests, beliefs and attitudes.

**ACTIVITY 1.5**

*Use the Internet, electronic databases and/or the library to find three articles or books on the characteristics, skills and abilities of the successful IT/CAT learner. Write a report of approximately 300 words on your findings from the literature.*

**1.6 PROFILE OF THE SUCCESSFUL IT/CAT TEACHER**

Just as there are no hard and fast qualities and characteristics for being a successful IT/CAT learner, there are no specific rules and qualities for being a successful IT/CAT teacher. However, if you become aware that learners are keen to come to the IT/CAT class, that they are excited about what they learn, and that they are willing to try to master the learning content by themselves, it might be an indication that you are doing something right!

Stephenson (2007) mentions five qualities of exemplary teachers that fit well into our current approach to education. According to Stephenson (2007) these teachers:

- use a problem-solving approach: learners are allowed to examine problems from different angles and perspectives and formulate solutions;
EMPOWERING IT AND CAT TEACHERS

- **focus on the real world**: learners are motivated by having them create real-world artefacts and encouraging them to understand the essential link between the problem, the user, and the solution;
- **explicitly emphasise design**: the design process is taught and used, ensuring that learners master the steps involved in designing, creating, testing, and debugging software in the case of IT, or the steps involved in designing a website in CAT;
- **create a welcoming environment**: classrooms are made welcoming environments for all learners, and creative ways are found to engage all learners with relevant examples and exercises; and
- **model lifelong learning**: the teachers serve as role models for their learners by continuing to enhance their own teaching and technology skills and by exploring new ideas and new technologies.

Although not all successful teachers display exactly the same characteristics, qualities, skills and competencies, most of the following in the more detailed list should be true regarding the successful IT/CAT teacher. The successful teacher:

- has adequate academic and professional training;
- displays a sound knowledge of and interest in IT/CAT and related subjects;
- has a disposition to lifelong learning and the ability to do original, scientific research on the subject;
- is enthusiastic about his/her subject and stays up to date with developments in computer and information technology (SACTE 1995);
- ensures that every learner is aware of the value of the subject, whether for personal, occupational or further training purposes;
- is aware of the demands on and standards required of novices in IT/CAT;
- is able to identify the needs of different learners based on their abilities and methods of learning, and differentiates accordingly (SACTE 1995);
- is well organised and has clear ideas about his/her daily teaching plans, assignments, and grading policies (Tolani 2007);
- links to the experience and level of development of the learner and then moves from the known to the unknown;
- uses real-world problems or scenarios to direct teaching-learning activities;
- confronts learners with problems and situations that they will encounter in practice;
- formulates outcomes clearly so that learners know what has to be achieved and what is required of them (SACTE 1995);
- uses a variety of teaching strategies to prevent boredom (SACTE 1995);
- uses a variety of learning aids effectively (SACTE 1995);
- encourages learners to probe topics further, to analyse matters more critically, and to look beyond the obvious (Tolani 2007);
- motivates learners to trust their own abilities, to take chances, and to experiment with different approaches (Tolani 2007);
- has the ability to assess learners’ performance and abilities by setting realistic and accountable tasks;
sees to it that every learner in class is actively involved and works according to his/her optimal tempo (SACTE 1995);

creates opportunities for the more advanced learners to express their knowledge and skills, thus preventing them from becoming bored (SACTE 1995);

is kind, yet firm;

takes an interest in all learners and treats everyone with respect; and

has the ability to win the trust of every learner by being honest and fair.

1.7 CONCLUSION

In this chapter, IT/CAT as part of the school curriculum, its nature and purpose, the national policy documents, the aims of IT/CAT as school subjects, and the typical successful IT/CAT learner and teacher were discussed. The information gained in this chapter can be used as a framework to position the building blocks (knowledge and skills) of the next chapters in the appropriate place in your conceptualisation framework of IT/CAT as school subjects.
ASSIGNMENT 1

1.1 Formulate and motivate your opinion on the view that the purpose and aims of IT/CAT will equip the learner to fulfill his/her role in the community as an independent and competent citizen.

1.2 Critically evaluate the possibility of making IT/CAT a compulsory school subject for all learners form grade 10 to grade 12.

1.3 Study the specific aims provided in the policy documents for IT/CAT, as well as the main topic areas of the content of IT/CAT. Critically discuss whether the main topic areas satisfy the specific aims set for the subject. Motivate your answer by providing examples from the content prescribed for IT/CAT.

1.4 Design a presentation of approximately 10 slides that you can use to promote IT/CAT as a subject. Your presentation must be aimed at convincing learners and parents of the advantages and value of the subject.

1.5 Write a report of approximately 300 words to explain what you, as a practicing teacher, will do to ensure you “stay up-to-date with developments in computer and information technology” and comply with the requirement of “lifelong learning and the ability to do original, scientific research on the subject”.

REFERENCES


DBE (Department of Basic Education) see SOUTH AFRICA. Department of Basic Education.

DOE (Department of Education) see SOUTH AFRICA. Department of Education.


Teague, J. 1998. Personality type, career preference and implications for computer science recruitment and teaching. (In Association for computing machinery. Paper read at the 3rd Australasian conference on computer science education held in Brisbane, Australia, pp. 155-163.)