FINAL REPORT

Review of Basic ICT Skills and Training Software For Educators in Africa

June 2003

Tina James

Olof Hesselmark

Ben Akoh

Leonard Mware

Project Team

Tina James (Team Leader)

Tina James Consulting
P O Box 72267
0040 Lynnwood Ridge
SOUTH AFRICA
Tel/Fax:+27 12 361-4334
Cell: +27 82 460-7915
e-mail: tjames@intekom.co.za

Olof Hesselmark

Skånegatan 66
11637 Stockholm Sweden
Tel: +46 8 6421244
e-mail: olof.hesselmark@telia.com

Ben Akoh

ictAfrica PLC
Dasset Building
Bole Road
Addis Ababa
Ethiopia
PO Box 57149
Tel: 1 1 632131 (office)
Fax: +251 1 632141
Cell: +251 9 217649 (cell)
e-mail: bakoh@ictafrica.com

Leonard Mware

Kenya College of Communications Technology (KCCT) and Independent Consultant
Tel: +254 2 310768 (office)
Cell: +254 722 857351
Fax: +254 2 221864
e-mail: mleo@africamail.com
mleonardo@yahoo.com

Acknowledgements

We would like to thank all of those people who were prepared to share their software materials with the study team, and who were prepared to allow evaluation of their resource materials. We also thank those who gave up their time for face-to-face interviews and telephonic discussions, all in pursuit of identifying additional ICT resources.

We acknowledge that we may not have identified and included any number of software resources that would be useful to educators. We hope that the users of this report will inform the Imfundo staff of any additional ICT skills software that would add value to future users and learners. Likewise, any additions, omissions or corrections should be brought to the attention of the Imfundo office.

Table of Contents

Project Team ..... *i*
Acknowledgements ..... *ii*
Table of Contents ..... *iii*

1. Introduction and Purpose 1

2. What do Teachers Need to Know about ICT? 2

3. Why ICT Training for Educators? 3

4. Moving towards Theme-based ICT training 4

5. Key Issues Requiring Consideration 5

Access to ICTs 5
Applicability of ICTs to Educators and School Principals 6
The Special Needs of ICT Literacy / Computer Studies Educators 6
Open Source Software or Not? 6
Use of Local African Languages 7
Accreditation of ICT Courses 7
Quality and Content of ICT Training Materials 7
Modes of Delivery 7

6. Project Approach 8

7. Evaluations 12

Addoceo – ICDL 13
Advance Learning – ICDL 14
BBC Webwise CD-ROM Version 15
Datapower - ICDL (Norway / UK) 18
Educator Development Network (SchoolNet South Africa) 19
Electric Paper – ICDL 23
Intel ® Teach to the Future 24
ISV – ICDL 28
LearnScapes (South Africa) 29
Mindleaders ICDL (Kenya) 33
Monash Learningfast - ICT Skills Benchmark 35
NETg ICDL (Kenya) 40
Smartforce – ICDL (Kenya) 42
UNESCO ICT Training Kit and Digital Library 44
World Links Training Materials 49

8. Concluding Remarks 52

APPENDICES

Appendix 1: **Identifying Potential Sources for ICT Software – Key Institutions and Projects……..55**

Appendix 2: **Selected List of Useful Websites for Educators…….63**

Appendix 3: **Guidelines for Evaluating the Content of Specific ICT Literacy Training Materials……66**

Appendix 4: **Using the Evaluation Framework……67**

Appendix 5: **Evaluation Framework Template (Excel)**

Appendix 6: **Completed Evaluation Frameworks (Excel)**

1. Introduction and Purpose

This study was commissioned by DFID's Imfundo initiative[1] in response to increasing requests from African educators to assist them in identifying suitable training materials to develop basic information and communications technology (ICT) skills. Such skills would include basic computer literacy, the use of e-mail and the Internet, software for word processing, spreadsheets, presentations, and the creation of Websites. The attainment of such basic ICT skills is a precursor for teachers, government officials, peer educators and others to maximise the potential of ICT-based learning. This will ensure that they are well grounded in basic skills at the onset of ICT education initiatives, which in turn can support the effective utilisation of ICT as a tool for enhancing the quality and impact of teaching and learning in Africa.

The benefits of acquiring ICT skills are many – improved learning and teaching through access to better teaching resources, administrative efficiency and effectiveness, entertainment, communication with other educators, and more creative uses such as presentations for teaching purposes, the creation of award certificates and report cards, and lesson materials incorporating graphic materials. On the down side, some see the acquisition of such skills as a way out of teaching toward better employment opportunities. This is a risk and a concern that has been raised by several projects where the introduction of ICT skills to teachers has been introduced. However, the use of ICTs in the classroom may result in greater challenges and satisfaction for educators who are able to use the technology.

Pre-service teacher training institutions in even the poorest African countries are slowly being equipped with computers, and increasingly teachers are being exposed to this technology through various school networking initiatives as well as the presence of telecentres, multipurpose community centres and Internet cafés. Overall, access to ICTs is gradually growing, particularly in urban and peri-urban areas, and more, rather than fewer ICT resources will be available in the future.

Within the above-mentioned context, Imfundo has undertaken a number of studies to evaluate available materials for primary school teachers and learners. These studies have included 'content-rich' materials in the areas of mathematics, science and English.[2] By content-rich materials we refer to resource materials and software that provide the actual content materials in particular subject areas, and *not* the tools for creating such content (although these may be included in some cases). The present evaluation study should be viewed as a complementary study to those already mentioned above, in that it specifically looks at 'content-free' ICT software tools and applications that can be used to develop appropriate content. Examples would include standard office packages such as word processing, spreadsheets, databases, the creation of Web-based materials, and presentations.

Most of the software packages that are used in teaching ICT skills are instructor-led and in many cases are not available in digital format. Our selection criteria for inclusion in this evaluation study however precluded the inclusion of these materials and the search for appropriate software only addressed materials available on the Web, via CD-ROMs or on diskettes.

The study aimed to test the appropriateness of ICT skills software for use in an African context, and particularly to address the needs of African Educators requiring professional development. This is

[1] *www.imfundo.org*

[2] For further information refer to the Imfundo Website (*www.imfundo.org).* See also, Roberts, Nicky (December 2002*).* Evaluation of Educational Software for the African Context: Guidelines for Educators. *http://imfundo.digitalbrain.com/imfundo/web/teach/edusoft*

taken to include those in pre-service training, as well as those educators in in-service training who may have been 'left behind' by the digital revolution.

The study also set out to develop an evaluation framework that could be used by other evaluators to assess the appropriateness of basic ICT skills software in their own environments.

2. What do Teachers Need to Know about ICT?

At present – in 2003 – computers for use by learners are beginning to find their way into schools in Africa. In most parts of rural Africa, however, the introduction is slowed down by a lack of resources. A majority of Africa's rural secondary schools have no electricity and no telephones, thereby effectively locking out ICT as an enabling tool for teaching, content production and administrative support. Provision of basic infrastructure is expensive, and ICT penetration has been slow. These facts set the boundaries for the need for ICT knowledge for teachers. The majority of school teachers are likely to work in computer-free environments for the next ten years, if not more.

In schools where ICTs are available, teachers will want to know how to use them, and what one can do with them. Although computers can be used for a large number of tasks and activities, their uses can be broken down into a few very basic categories. It is these uses that have defined the parameters of the present evaluation study.

Overview of Basic Uses of Computer Software		
Task	**Tool**	**Estimated Learning Needs**
Communicate with remote locations - other educators, government officials, learners, education specialists, content producers, etc	e-mail	Very simple <5 hours
Internet use & information searches for classroom resource materials	Internet access	Minimum of 5 hours
Typing skills Playing games	Typing tutor	As needed, minimum 10 hours
Write, edit and print (reports, teaching materials, lesson plans, classroom schedules, letters)	Word processor	Basic skills. 10-20 hours
Compute and calculate (learner mark schedules, class averages, school averages, report cards, school budgets)	Spreadsheet	Basic skills. 5-15 hrs
Collect, store and retrieve data (learner and educator personal information)	Data base application	Basic skills 20-30 hrs
Use as a tool for teaching additional classroom resource materials)	Edu software – subject specific materials in science, history, English, mathematics, environmental sciences, etc	Very simple for learner – 1-2 hrs. Medium complex for teacher.
Use as a tool for transaction processing and administration	Specific software – e.g. school admin, scheduling of classes and timetables.	Basic skills – 10-20 hours
Create and maintain a Website	Wed design software	Basic skills – 10–20 hours

Becoming comfortable with computers is to a large extent a matter of practice. Learning how to type and use the keyboard is essential for all users, but it takes hours of actual practice to reach a reasonable speed and accuracy. Access to equipment is therefore crucial for learning, and that is where the most important constraint will be.[3]

[3] Assume that each teacher student needs 40 hours per year of actual computer time in order to be reasonably computer-literate. This includes time to complete course assignments using the computer. As there are about 40 weeks in the academic year, one computer in 20 students will be necessary, allowing for planning and congestion in computer rooms. In a teacher

The needs of an education student with regard to computer literacy does not differ much from that of the general public. Basic familiarity with computers requires much the same skills base, whatever one's profession. Everyone learns about e-mail, Internet browsing and producing text in the same way. But using computers in the classroom and as a teaching tool is different, and this will need special attention. For basic skills, however, ordinary training tools and software can and should be used, and that is the premise on which this evaluation study is based.

3. Why ICT Training for Educators?

The meaning of what is "relevant and useful knowledge" changes very quickly in the ICT field. The tools and applications used by the average user change continuously, and specific knowledge tends to become obsolete faster than in most other areas. Young teachers, now training for a future teaching life should, at least, avoid learning what is already obsolete in the field of ICT. It may therefore be useful to indulge in a little conjecture about the technical future of ICT in Africa. The basis for our conjecture is that those economic and technical trends that are already established will not be reversed. This means that the telecommunications capacity of the continent will continue to expand and the gradual shift from wired towards wireless technology will continue. Political events may stop, delay or reverse the sequence of events in some places and for a time, but we'll assume that on the whole the ICT process, as we know it is unstoppable. The cost of computers and other ICT related equipment will continue to fall, and the trend towards simpler user interfaces and setup procedures will continue. The cost of using telecommunications services for the Internet will fall dramatically.

In search of relevant content in an ICT curriculum for educators we can therefore attempt to predict the basic direction of ICT in Africa. Taking a ten to twenty year perspective we can assume that ICT resources will be widely available for communication purposes throughout Africa. Dramatically lowered costs will make electronic communication available and affordable to a large part of the population. The computers used for Internet and e-mail communication today will be replaced by an array of new communication devices and systems.

Computers will continue to be used side by side with new devices much as it is today. Children in primary and secondary schools will increasingly, in the years to come, be able to use the new communication devices in their school environment. More and more schools will have computer networks[4], and many schools will become community communication centres. All school leavers will have some knowledge about using the new communication media. Teaching children to communicate in this environment will be an essential part of schooling, with very high demands that the teaching is relevant, up to date and in line with the communication methods currently being used. Since it is safe to predict a continuous change in technology, whatever is taught in teacher training institutions will be partly obsolete already by the time the teachers start working. As far as knowledge to operate future communication means is concerned, only a generic type of understanding seems reasonable to teach. Detailed knowledge about obsolete systems and methods must be avoided.

training college with 500 students, this means a minimum of 25 computers – all functioning. Another consideration is maintenance. 25 computers in constant use will require at least one full time technician to keep them running, at considerable expense.

[4] Today, physical cabling determines the layout of computer rooms. Wireless local networks covering an entire school are already cheaper than the traditional wired solution. In a wireless environment, each (portable or fixed) computer has full access to the network as long as it is within range of the network radio waves.

Computer literacy includes knowledge about more sophisticated office applications, such as databases, document production, spreadsheet usage and specific applications for multimedia, administrative and technical uses. Teaching this broader computer literacy requires specialist competence and relatively long training. These requirements must not be confused with curricula for the more generic use of computers and new communication devices for either text or voice communication. As the technology advances, users will find the technology increasingly easier to use and it is likely that little computer literacy will be needed to use the future communication devices. What becomes important it *how* to use the technology effectively, rather than " what makes this computer / software work?" New generations of software will hopefully be ever more user friendly and automated, allowing users to concentrate on what they do rather than on how to do it.

The new communication environment will arrive gradually in African schools, first to enable communication, but soon also to bring new content in the form of teaching applications and access to a vast range of educational resource materials. Gradually, the teaching and learning environment will begin to change. Communications technology will eventually make distance learning a reality in African schools and on a scale not seen before. Broadband access is still a novelty in the first world, and on-line teaching material requiring a high-speed connection is only now beginning to appear. Ten years from now, however, much of it will be freely available to African schools, who will be able to access it at very low cost. The strategies for dealing with ICT training for teachers will of course reflect the local conditions, giving Botswana a different strategy than the Congo. In Botswana, most schools will have computer networks installed in a few years' time, while rural schools in the poorest parts of Africa will have nothing even twenty years from now.

4. Moving towards Theme-based ICT training

In the developed world, specific ICT courses for students of education and other tertiary level students seem to be waning[5]. There are a number of reasons for this, the overriding one being that students are already computer literate by the time they start their tertiary education. More fundamental (and of particular relevance to this evaluation study) is that formal IT training has been found to have limited impact in relation to the time spent on teaching it. The teaching of ICT skills is being approached differently, driven by the assumption that it can be learnt incidentally while focusing on specific education-related tasks and themes. This is very much the thinking behind SchoolNet South Africa's Educator Development Network, for example.

In Africa, few high school students have access to computers and so the situation is rather different in terms of hands-on experience. Few educators-in-training are likely to have had ICT exposure. The question that therefore needs to be posed is whether a doubtful methodology in the developed world should be encouraged and promoted in Africa. Although there appears to be an obvious need for ICT skills training, and although this study aims to evaluate software to support this, the reader should consider whether alternative approaches are not likely to be more effective in education, or for that matter in general. Today, a half-day introduction is enough for most people to be able to access the Internet and to start using e-mail. New generations of software will hopefully be ever more user friendly and automated, allowing users to concentrate on what they do rather than on how to do it.

The perspectives of a Namibian educator are worth quoting here[6]:

[5] Several sources: UNIC, the Danish Center for Education and Research, Denmark; Lärarhögskolan Stockholm, Sweden; National Institute for Education Development, Namibia.
[6] Ms. Heidi Soule, National Institute for Educational Development (NIED), Okahandja, Namibia.

"Although ICT literacy training does not necessarily need to be like this, my experience is that these programs primarily fail along the lines that a) they provide entirely too much information, b) they're boring, c) they do nothing to encourage learners to think about how the technology can be useful, d) they discourage new users from developing the skills and perspectives they need to understand how to learn new technologies on their own, e) (particularly in the case of teachers) they encourage people to see the technology as something to be learned about, not something to be learned to use creatively, and f) it's too difficult to do it in a learner-centred fashion (this is particularly damning for tools that are hailed as great learner-centred technologies).

Further, ICT literacy training (like many training models) has a tendency to be repeated in an ever-worsening cycle of cascade training. In other words, bad ICT literacy training ends up being repeated by teachers with their students. I am currently involved in an activity involving 40 teacher educators (10 from each college of education). At the core of this activity is an online course provided by Harvard University focusing on using technology in a standards-based education system. The course is focused on the Teacher for Understanding (TfU) framework for education. What I like about this course is that it' focus is good teaching practice rather than technology. I also like it as it is getting these educators using the technology first as a tool for other purposes rather than as a focus of a course itself. The primary outcome of the course is getting the educators to rewrite and re-teach a teaching unit integrating technology. In the process, the teachers (via experiencing an online teaching environment and using technology as a teaching tool) will undoubtedly learn a great deal of computer literacy, but, even more important to me, their initial thoughts on technology will be the question "How can this technology be used to enhance teaching and learning?" rather than "What is a monitor?" or "What does http//: mean?"

5. Key Issues Requiring Consideration

Educators face a number of barriers and constraints relating to ICTs, a number of which are common to all educators. African educators and educators in developing countries do however face specific problems that may be more difficult to overcome, particularly in the areas of access to ICTs and affordability. When evaluating suitable ICT skills software, these constraints should be kept in mind, as they are likely to impact on the suitability of one package over another. The brief overview below lists some of these constraints and how they affect the African educator.

Access to ICTs

Access and availability are key factors. ICTs are generally expensive and the associated expenses for the equipment, telephone costs and Internet access may be prohibitive. Software that needs to be downloaded is dependent on the capacity and reliability of the Internet connection. Files of 5 MB can take hours to download through a dial-up modem, and the download process is frequently interrupted. This would severely limit access to course materials and/or educational resource materials. How quickly software downloads from the Internet is therefore a critical issue for African educators, and it is likely that preference will be given to software that runs off CD-ROM or a local server.

True computer literacy comes through the regular use of computers and most users begin to appreciate the usefulness and personal benefit deriving from the ICT applications with regular

access. Teaching computer skills to school educators makes very little sense if their chances of ICT access are not even on the horizon. Where educators do have access to computers, these are generally made available for three purposes:

- **Administration:** Where 1 – 2 computers are available, these are generally used for administrative purposes only and are housed in the principal's office, the staff room, or in some cases in a classroom. Only educators and school principals would have access to them.
- **Computer classes:** Generally, if there are more computers (4 or more) these are housed in a classroom or a computer lab. Learners have access to them and generally an educator is assigned the role of "computer studies teacher".
- **Subject classes:** In some schools, subject-specific software is used for lessons in Mathematics, Languages, Geography and Science. Ultimately this is the use of ICTs that should be encouraged for educators – as a technology tool to add teaching.

Applicability of ICTs to Educators and School Principals

Teachers generally have to carry out the following activities as part of their teaching activities:

- Preparation of school business plans;
- Preparation of lessons;
- Correspondence to departments of education, for fundraising, to parents;
- Mark schedules;
- Databases of student registrations;
- Award certificates;
- Learner progress and end-of-year reports;
- Preparation of exam papers;
- Typing of assignments for their ongoing education purposes;
- Access to information resources for lesson preparation and for further education; and
- Communication with other educators.

Any basic ICT skills training software will have to take note of these needs and ensure that educators will be better equipped to perform them as a result of using their newly-acquired ICT skills.

The Special Needs of ICT Literacy / Computer Studies Educators

At the beginning of the ICT-literacy process, the ICT literacy educators will have inadequate skills. They are an important target group with a high demand for ICT training. They will need a curriculum at a much higher level than other educators from the same school. Minimum skills for a computer teacher are likely to be at the level of the International Computer Driving License (ICDL) and higher. This evaluation study did ***not*** focus particularly on this group of educators, but on educators who need to acquire a basic level of skills to enable them to teach better.

Open Source Software or Not?

Open Source Software (OSS) is on the face of it much more affordable than contemporary Microsoft software and is therefore an option that is receiving serious attention on the African continent. The South African government, for example, has put in place an open source policy for government and already the implementation of limited OSS has saved that government millions of dollars per year. Likewise, there has been increased interest from the donor community in assessing the feasibility of OSS, with several studies underway. In addition, an African Open Source Foundation has been created. OSS works well with refurbished computers, still a major source of school equipment in many countries. Microsoft licensing for the reinstallation of Windows packages on refurbished computers can turn out to be very expensive. Since both OSS and Microsoft installations will continue to be used side by side in most countries, this becomes an important consideration in selecting software. As will be seen in the evaluation section of this report, there is presently very little software running on open source.

Use of Local African Languages

The use of local languages is an area of concern. Operating systems and basic software are available in all major world languages, but very few African languages. This is generally not as problematic in large African cities where English, French, Portuguese or Arabic are spoken, but would be a problem in rural areas where exposure to these languages is likely to be low e.g. using the Internet for sending e-mails The IT tool itself will frequently need knowledge of a foreign language, even if it is possible to write messages in one's own language.

Generally, the keyboards would not be a problem in Africa as only Arabic, Amharic and Amarinja in Ethiopia/Eritrea use non-Roman script. Arabic script is available on modern word processors, and Ethiopic (Ge'ez) fonts are used with a special keyboard. Some other languages use only the standard 26 character English alphabet, but others would need special fonts, usually available from local academic sources.

Translation of ICT-related words is a problem and it appears that, in most cases, the English, French or Portuguese words are simply incorporated into the local languages.

Accreditation of ICT Courses

In most countries where ICT skill training has been introduced to educators, the issue of accreditation (local and/or international) has been raised. This is particularly relevant to educators who may wish to see computer literacy skills tied to either improved pay or promotion possibilities. What is cause for alarm, however, are the myriads of inferior quality ICT skills courses in the African marketplace. Few commercial training courses have been accredited, and many potential trainees are duped into paying considerable sums of money for training that is of dubious quality. In the donor community there is also evidence of 're-inventing the wheel' when it comes to developing ICT skills software and manuals, and a number of ICT projects on the African continent seem to develop their own ICT training courses with little consideration for what has already been developed.

Quality and Content of ICT Training Materials

Experience has shown that technophobia is a problem with older learners - educators are therefore likely to need more guidance in acquiring ICT skills than often required by the children they teach. Educators are also less likely to have much time for experimentation or for lengthy course materials with too much detail. ICT skills software should therefore ideally be short and practical, with many examples applicable to the needs of educators.

Modes of Delivery

There is a technological progression in delivery modes of e-learning, from paper and lecture-based to fully interactive multimedia learning labs. Since the availability of technology in African Colleges of Education differs widely from country to country and institution to institution, we need to look carefully at this aspect.

- *Lecture-based products* are traditionally delivered in a face-to-face classroom situation, using a variety of media to enhance the learning experience. This is still the general *modus operandi* for many ICT skills courses. When this type of material is developed in digital format, it is generally presented as a series of lectures via diskettes, videotapes, CD-ROMs or on the Internet. Often this takes the form of a series of written lectures (typed in a word processing package), with little or no interactivity between the learner and the material. Some make use of graphics, sound and filmed sequences. Although relatively cheap to produce, such digital content does not fully exploit the interactive possibilities that ICTs offer.

- *Hands-on / self-paced products* are usually delivered on CD-ROM or can be downloaded from the Internet. There is some level of interactivity between the learner and the software. The simplest example would be some of the typing tutors on the market. Despite their simplicity, such a programme can offer a very effective interactive training environment for learning touch-typing skills. More advanced Windows-based typing products come in a variety of multimedia formats, some with embedded games and high levels of interactivity and graphics. All of these are self-driven and stand-alone packages that do not require the presence of instructors to be used.

- An *interactive learning* environment is by definition computer-based. The learner is presented with facts and information about the subject matter, using a combination of text, speech, pictures, simulations and video sequences. These products create a learn-by-doing environment that can be very effective for a motivated student. The drawback is that they generally require large memory capacity on the computer, are very expensive to produce, and thus have high licence fees, or require extensive donor or private sector support.

- W*eb based solutions* are also available, but they need relatively fast Internet connections. In this case, the software is run from an Internet server in a remote location, and data is downloaded on-line as the users need it. When used on a small Local Area Network, 10 to 20 simultaneous users sharing a dial-up connection will result in very slow response times and this solution is not practical. The cost of a permanent connection to an Internet Service Provider, together with telephone charges, is very expensive in all African countries, and constitutes a serious financial barrier.

6. Project Approach

Given the context outlined above, the project team undertook to identify and evaluate ICT skills software packages that would meet the specific needs of African educators particularly in terms of access, affordability, suitability and quality. Against this background, three activities eventually made up the major part of this study:

1) ***Identifying and tracking down available and appropriate ICT skills software***: Approaches were made to key individuals/institutions in six African countries (Ethiopia, Kenya, Mozambique, Namibia, South Africa and Zambia), as well as to selected donor agencies and international private sector foundations known to be involved in ICTs and/or educator development (See **Appendix 1** for a summary list per country). These included institutions offering basic ICT skills training, made their courses available in digital format, and whose offerings were specifically geared towards the needs of educators, or could be of value to educators

   In addition, Web-based desktop research was carried out to identify downloadable materials and online courses (See **Appendix 2** for a list of some of the more relevant international Websites identified).

   Imfundo also extended an invitation to its partners to provide the team with appropriate resource materials they might produce.

   These tasks proved to be more complex than initially envisaged, with many delays, reluctance to share software for evaluation purposes, and the pursuit of many avenues on the Web that revealed relatively few suitable resources. Instead there were many cases where ‘course’ material either consisted solely of text-based documents, or were not available in digital format, thereby not meeting the basic requirement of this evaluation i.e. ICT skills *software*. These resources are mentioned but were excluded from the full evaluation. What this does seem to indicate is that:

- The pool of suitable ICT skills training software for African educators is very small;
- There is almost no content produced in Anglophone African countries, besides South Africa, that has been made available on the Web; [7][8]
- There are hardly any publications or notifications that refer to the creation and/or availability of CD-ROM based materials in African countries; and
- It would be an extremely frustrating task for most educators, probably with limited Internet access, to search for and find relevant ICT training material as a number of the more prominent resources were not revealed through extensive Web searching, but through word-of-mouth contacts in education.[9] This study could therefore form the basis for a useful source of information for educators.

A short list of selection criteria was used to determine whether material would be evaluated or not and consisted of the following:

- Does the content of the course cover at least two of the following basic ICT skills – word processing, the Web and the Internet, use of e-mail, spreadsheets, databases, graphics / presentations? (See **Appendix 3** for a breakdown of components for each of these areas)
- Is it available in digital format – diskettes, CD-ROM, as an Intranet version, on the Web?
- Would it be available in African countries?
- Is it affordable – free or low cost?

Some materials that met these criteria were then further excluded on the following basis:

- Depth of coverage of the materials e.g. if the materials were more of a "how to" or troubleshooting nature then it was excluded as it did not constitute a proper training course;
- Training material consisting of text pages only i.e. the materials were basically a number of typed pages strung together with no obvious training approach dictating the approach; and
- 'Free' online training materials that were loaded with advertising slogans and banners and that would be too slow for downloading from the Internet.

2) ***Developing an evaluation framework:*** The framework was developed in Excel. A detailed description on "How to Use the Evaluation Framework" (**Appendix 4)**, together with a pro-forma template for others to use, are included in **Appendix 5.**

Based on the combined experience of the project team and reference to frameworks used in other evaluations, the following categories were included in our evaluation framework. A pilot version was tested in Kenya by three trainees at the Kenya College of Communications Technology, followed by a pilot evaluation of the BBC's Webwise software to assess whether the categories and ratings would produce consistent results across different evaluators. At least five iterations were required before the final evaluation framework was ready for use.

Descriptive categories

These were not given ratings, but are included to provide the necessary background to the software package.

- **Brief description** of the software (purpose, country of origin, suitability for educators, etc);
- **Entry level of competence** (level of previous knowledge required, cultural bias, language, etc);
- **Cost** (including whether discounts are available for educators);

[7] This study did not include francophone or Arabic materials; no software was found in Mozambique.

[8] The ICDL software is probably the most well represented ICT skills software in many African countries, with many private sector training companies developing their own training materials to support the completion of exams for this course. It appears that this is fast becoming the most accepted accreditation. We have not covered all of these training packages – there are too many but have selected a sample from Kenya. The ICDL courses may be too long and involve more commitment than educators may require or need to use ICTs.

[9] The one exception appears to be the ICDL course materials – these were easily found and it appears that the ICDL is being well promoted on the African continent.

- **Format and Installation Requirements** (what equipment is needed to run the software, is it available online/offline? etc.);
- **Pedagogical approach** (can it be used for self-paced training, does it require an instructor?).

Evaluated Categories

The project team determined that the following categories would be used for evaluation. A rating scale of 1 – 4 was adopted (1 = poor; 4 = excellent).[10]

- **Content** (breadth, depth, suitability for educators);
- **Interface** (ease of use, navigability, user friendliness, colour and sound quality, disability – friendliness, etc);
- **Applicability to context** (how suitable is it for African educators, language usage, understandability of the accents and jargon, etc);
- **User support** (quality, availability, tutorials, help facility on-line help desk, etc);
- **Interactivity** (level of interactivity and creativity, learner involvement, etc.).

Details of the rating system can be found in **Appendix 6** (section on Criteria).

3) ***Evaluating the ICT skills software****:* In total, 15 software packages were found to match the criteria which were used for determining inclusion / exclusion in the evaluation. A list of the software evaluated is included in **Table 1**.

Detailed evaluations are presented in **Chapter 7**. Each evaluation consists of two parts: 1) a narrative evaluation that describes in more detail the various components included in the evaluation framework, plus a summary of the assigned ratings; and 2) a completed Excel-based evaluation sheet which allowed the evaluator to rate the various categories. The latter are included in **Appendix 6.**

[10] To avoid a 'sitting-on-the-fence' result often found in indecisive evaluators, it was decided to adopt the 4-scale rather than a 5-scale rating system.

Table 1. Overviews of ICT Skills Packages Evaluated

Software Title	ICT category										Instruction Mode			Format						
	Basic Concepts	Operating Systems	Word Processing	Spreadsheets	Databases	Presentation Tools	e-mail and Web	Web Design	ICT integration	Education-related	Instructor-led	Individual Study	Interactive Web-based	CD-ROM	Web	Diskettes	Audio-cassettes	Video and TV	Paper copy	Other
Addoceo ECDL	X		X	X	X	X	X					X	X	X						
Advance Learning ECDL	X		X	X	X	X	X					X		X						
BBC Webwise							X					X	X	X	X					
Datapower ECDL	X		X	X	X	X	X					X	X	X						
Educator Development Network	X		X	X			X		X	X	X	X	X	X	X					
Electric Paper ECDL	X		X	X	X	X	X					X	X	X						
Intel® Teach to the Future						X	X		X	X	X			X					X	
ISV ICDL	X		X	X	X	X	X					X		X						
LearnScapes (South Africa)	X	X	X	X			X				X	X								X
MindLeaders ICDL	X		X	X	X	X	X				X	X			X					X
Monash University LearningFast	X		X	X	X	X	X					X	X	X	X					X
Netg ICDL	X		X	X	X	X	X													
SmartForce ICDL	X		X	X	X	X	X													
UNESCO ICT Training Kit	X		X	X	X	X	X			X	X	X		X						
WorLD Links	X		X				X		X	X	X			X	X				X	

7. Evaluations

The consulting team carried out the narrative evaluations presented here. The descriptions for each package should be read together with the evaluation sheets included in **Appendix 6**, although a summary of the scores for each evaluation sheet is included at the end of each narrative evaluation.

Addoceo – ICDL **Evaluator**: Olof Hesselmark	
Category	***Evaluation and Comments***
Brief Description	Software covers the ICDL syllabus. It prepares the student for the ICDL examination. Covers all seven modules.
Entry Level	A basic knowledge of the PC and computing concepts (for example an ability to use the keyboard and mouse).
Cost	Available in Ireland. €199, but negotiated prices for use in Africa might be negotiated
Media	CD-ROM
Installation requirements	Pentium 2-3 and above. The software is Windows-based.
Pedagogical approach	This course is designed for self-learning. It has a very detailed step-by-step approach, and may become boring after a while. It is very easy to use and very comprehensive.
Content	• The course fully covers the requirements for ICDL certifications. • Educators may find it useful for training of trainers' and as a reference tool at institutions and for short refreshers.
Interface	• Navigation tools include tools for moving forward and backward. Other tools are: • Skills assessment: Users assessment page. Allows user to take and view results of assessment • Scores: Lists users scores per unit of course within a module. Similar to score history. • The learner can control the learning process fully, by starting and stopping anywhere using comprehensive interactive menus. • No help function.
Applicability to Context	The language used is British English, but I found it rather complicated, using long words.
User support	Local support only available if a local distributor can be found.
Assessment and Feedback	The user is able to view and review performance. The assessment process itself does not use simulations, in other words there are no questions based on simulations. Learners however can view their score history.
Interactivity	The interactivity is controlled by the software, and uses simulated sequences from actual software packages.
Overall assessment	Software is highly recommended. Not suitable for total beginners. Only for students with a basic understanding of computers.

Overall Ratings: Addoceo			
	Average Weight	**Total Weight**	**Maximum Weight Attainable**
Content	3.33	10	12
Interface	3.22	29	36
Applicability to context	2.17	13	15
User support	2.86	23	32
Assessment and feedback	3.43	24	28
Interactivity	2.80	14	18
Total		**113**	**141**
80% EXCELLENT SOFTWARE, HIGHLY RECOMMENDED			

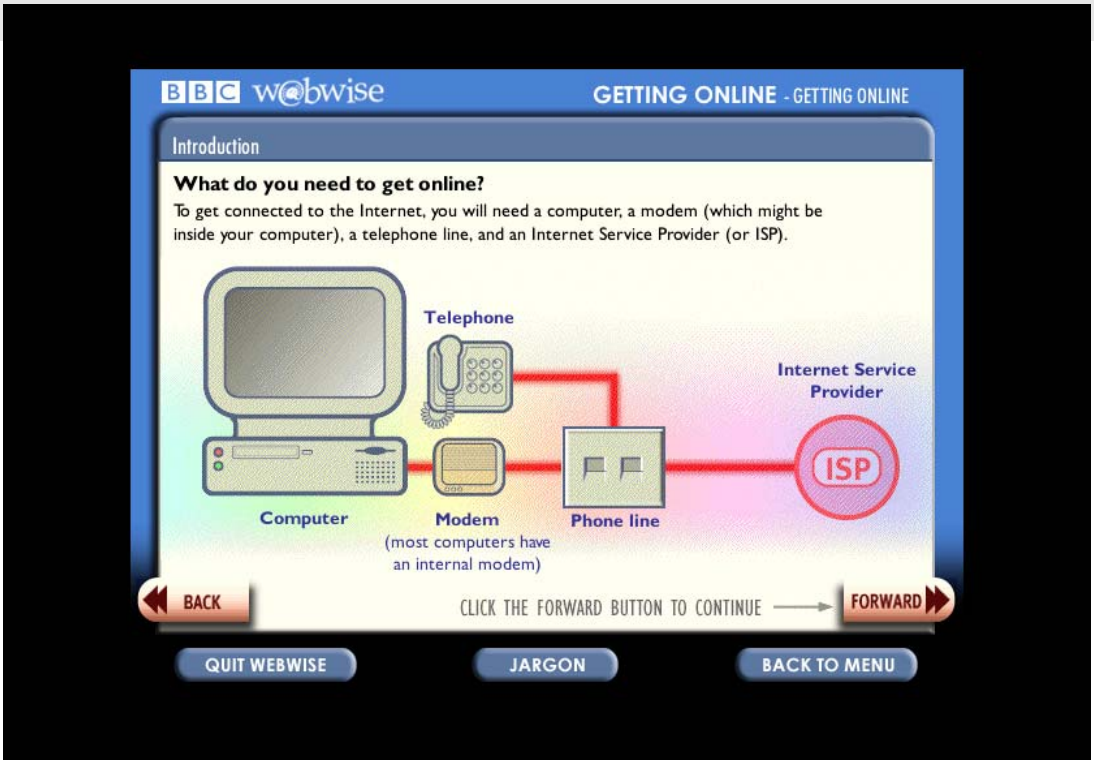
Advance Learning – ICDL **Evaluator:** Olof Hesselmark	
Category	**Evaluation and Comments**
Brief Description	Software covers the ICDL syllabus. It prepares the student for the ICDL examination. Covers all seven modules.
Entry Level	A basic knowledge of the PC and computing concepts (for example an ability to use the keyboard and mouse).
Cost	Available in Ireland. €99 per licence, but site licences are available.
Media	CD-ROM
Installation requirements	Pentium 2-3 and above. The software is Windows-based.
Pedagogical approach	This course is designed for self-learning. It has a detailed step-by-step approach. All steps are accompanied by many illustrations, and written and spoken text. The tutorials are in general very well designed.
Content	• The course fully covers the requirements for ICDL certifications. • Educators may find it useful for training of trainers' and as a reference tool at institutions and for short refreshers.
Interface	• Navigation tools include tools for moving forward and backward. Other tools are: • Skills assessment: Users assessment page. Allows user to take and view results of assessment. Very good test questions. • Scores: Lists users scores per unit of course within a module. Similar to score history. • The learner can control the learning process fully - start and stop anywhere using comprehensive interactive menus. • The Help function is available from the software, and covers all areas related to using the course.
Applicability to Context	The language used is good British English with good sound quality.
User support	Local support only available if a local distributor can be found.
Assessment and Feedback	• The user is able to view and review performance in a very simple way. Knowledge can be pre-tested before each module, and learning progress is measured against the scores obtained before. This gives excellent learning feedback. • The assessment process itself does not use simulators, in other words there are no questions based on simulators.
Interactivity	The interactivity is controlled by the software, and uses simulated sequences from actual software packages.
Overall assessment	Software is highly recommended. Not suitable for total beginners. Only for students with a basic understanding of computers.

Overall Evaluation Ratings: Advance Learning			
	Average Weight	**Total Weight**	**Available Total Weight**
Content	3.33	10	12
Interface	3.44	31	36
Applicability to context	1.67	10	15
User support	3.00	24	32
Assessment and feedback	3.71	26	28
Interactivity	3.00	15	18
Total		**116**	**141**
82% EXCELLENT SOFTWARE, HIGHLY RECOMMENDED			

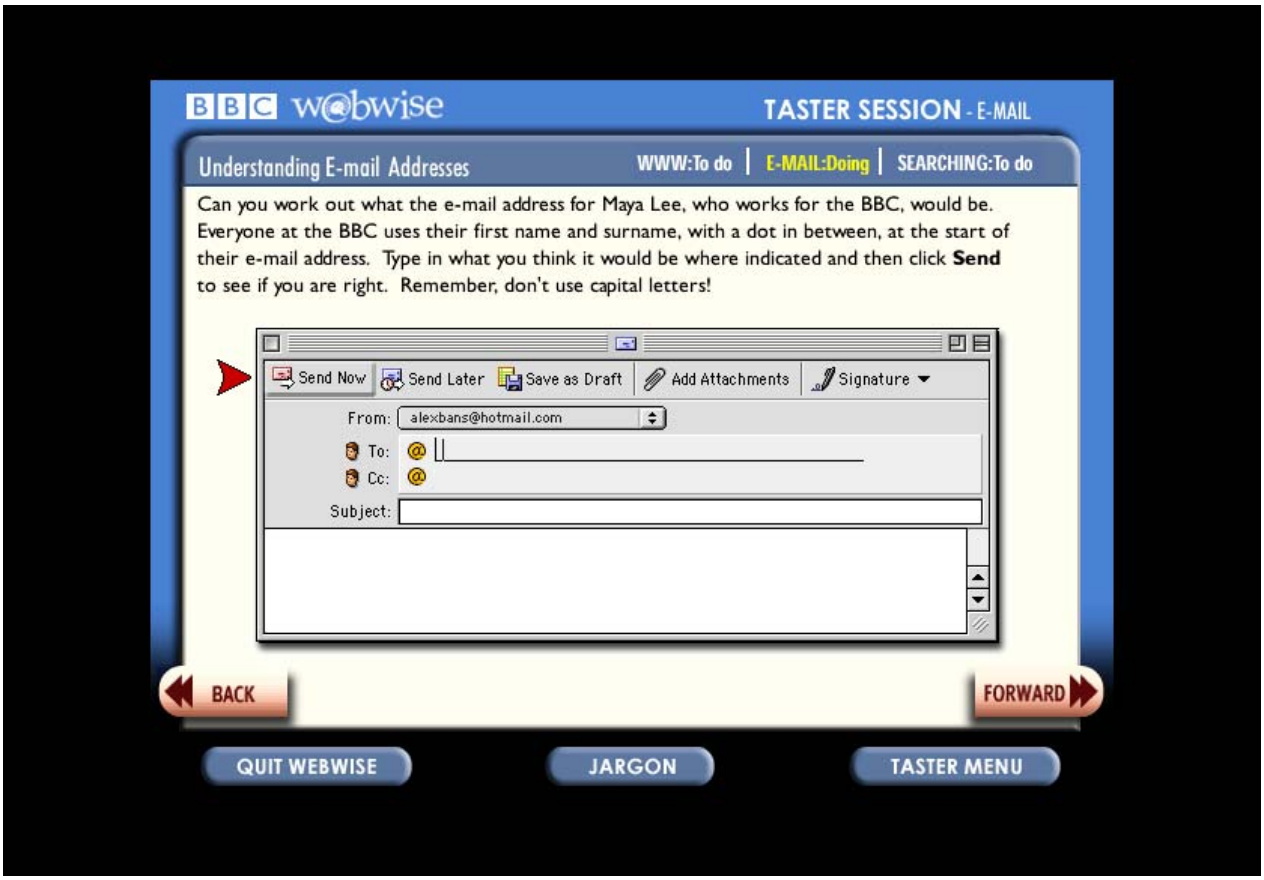
BBC Webwise CD-ROM Version **Evaluators:** Olof Hesselmark / Tina James	
Category	**Evaluation and Comments**
Brief Description	Software covers very basic computer use, e-mail and use of the Web. It is produced by the BBC. The course is available in CD-ROM format as well as online. Details can be found at *www.bbc.co.uk/webwise*
Entry Level	A basic knowledge of the PC and computing concepts e.g. an ability to use the keyboard and mouse although this is also covered in the training material).
Cost	Free. There are charges for following the more advanced course online.
Media	CD- ROM
Installation requirements	• Pentium 2-3 and above running at 233 MHz and above. • 32 MB RAM on Windows 98, 64Mb on Windows 2000. Although the packaging states that it cannot run on Windows XP, there were no problems doing so on the evaluator's PC. • Sound card • Windows • The software runs on Macintosh and Windows.
Pedagogical approach	This course is designed for self-learning. It has a detailed step-by-step approach. All steps are accompanied by many illustrations, with written and spoken text. The tutorials are in general very well designed.
Content	• The course covers most basic things about using the Web and e-mail. It also includes a useful 'Jargon' section, which gives definitions of the many acronyms used in ICT. • Educators may find it useful for training of trainers' and as a reference tool at institutions and for short refreshers. • If it is used to be extensively in an African environment, it would need reversioning as many of the examples are very British / Western e.g. Website references on British soaps, etc. Some of the technologies mentioned are unlikely to be available in most African settings e.g. accessing the Internet through Cable TV, mobile devices.
Interface	• A very easy, user-friendly package to use. There is little chance of a user getting lost and basically one can only move forwards or backwards. • Text size and layout are very easy to read – large letters and good use of colours. • Skills assessment: Users assessment page allows the user to take and view results of assessment. Very good test questions. • Makes extensive use of audio and most of the textual content is read aloud. • Many simulations allowing users to enter e-mail addresses. • Good correction of errors. • The learner can control the learning process fully. Start and stop anywhere using comprehensive interactive menus. • There is no built-in help function. • Learners can save the work they have completed and rejoin the course at a later stage.
Applicability to Context	The language used is good (BBC) British English with good sound quality. Generally though the audio speed is too fast for a second language English speaker and may present problems in some African environments.
User support	• The package is simple to use and requires little in the way of help menus, etc. • Local support will only be available in Africa if a local distributor is found.
Assessment and Feedback	• The user is able to view and review performance in a very simple way. • The assessment process itself does not use simulators, in other words there are no questions based on simulators
Interactivity	• The interactivity is controlled by the software, and uses many simulated sequences from actual software packages.
Overall assessment	This is a friendly, easy-to-use package that has been well thought out with its combination of graphics, audio and interesting simulations. Excellent software for those only wishing to learn to use e-mail and the Web. Suitable for total beginners. It scored a low rating because it did not cover all the components of basic ICT skills.

Overall Ratings: BBC Webwise			
	Average Weight	Total Weight	Maximum Weight Attainable
Content	2.67	8	12
Interface	2.67	24	36
Applicability to context	1.83	11	15
User support	1.13	9	32
Assessment and feedback	1.86	13	28
Interactivity	2.8	14	18
Total		**79**	**141**
56%	**NOT SUITABLE SOFTWARE FOR ALL BASIC ICT SKILLS**		

Example of BBC Webwise Layout – Graphic (with Audio) on Getting onto the Internet



Example of BBC Webwise Layout – Understanding e-mail Addresses



Datapower - ICDL (Norway / UK) **Evaluator**: Olof Hesselmark	
Category	**Evaluation and Comments**
Brief Description	Software covers the ICDL syllabus. It prepares the student for ICDL examination. Covers all seven modules.
Entry Level	A basic knowledge of the PC and computing concepts (for example an ability to use the keyboard and mouse).
Cost	Available in Norway and the UK. £150-170, but prices for use in Africa might be negotiated.
Media	CD-ROM
Installation requirements	Pentium 2-3 and above. The software is Windows-based.
Pedagogical approach	This course is designed for self-learning. It has a detailed step-by-step approach. It is very easy to use and very comprehensive. All lectures have four stages: introduction, theory, exercise and test.
Content	• The course fully covers the requirements for ICDL certifications. • Educators may find it useful for training of trainers' and as a reference tool at institutions and for short refreshers.
Interface	• Navigation tools include tools for moving forward and backward. Other tools are: o Skills assessment: Users assessment page. Allows user to take and view results of assessment. Very good test questions. o Scores: Lists users scores per unit of course within a module. Similar to score history. • The learner can control the learning process fully. Start and stop anywhere using comprehensive interactive menus. • The help function is available from the software, and covers all areas related to using the course.
Applicability to Context	The language used is good British English with good sound quality.
User support	Local support only available if a local distributor will be found.
Assessment and Feedback	• The user is able to view and review performance in a very simple way. Knowledge can be pre-tested before each module, and learning progress is measured against the scores obtained before. This gives excellent learning feedback. • The assessment process itself does not use simulations, in other words there are no questions based on simulations.
Interactivity	The interactivity is controlled by the software, and uses simulated sequences from actual software packages. This is the only software found where exercises are done directly with the different Office packages – Word, Excel etc.
Overall assessment	Software is highly recommended. Not suitable for total beginners. Only for students with a basic understanding of computers.

Overall Evaluation Ratings: Datapower			
	Average Weight	**Total Weight**	**Available Total Weight**
Content	3.33	10	12
Interface	3.44	31	36
Applicability to context	1.67	10	15
User support	3.00	24	32
Assessment and feedback	3.71	26	28
Interactivity	3.00	15	18
Total		**116**	**141**
82%	**EXCELLENT SOFTWARE, HIGHLY RECOMMENDED**		

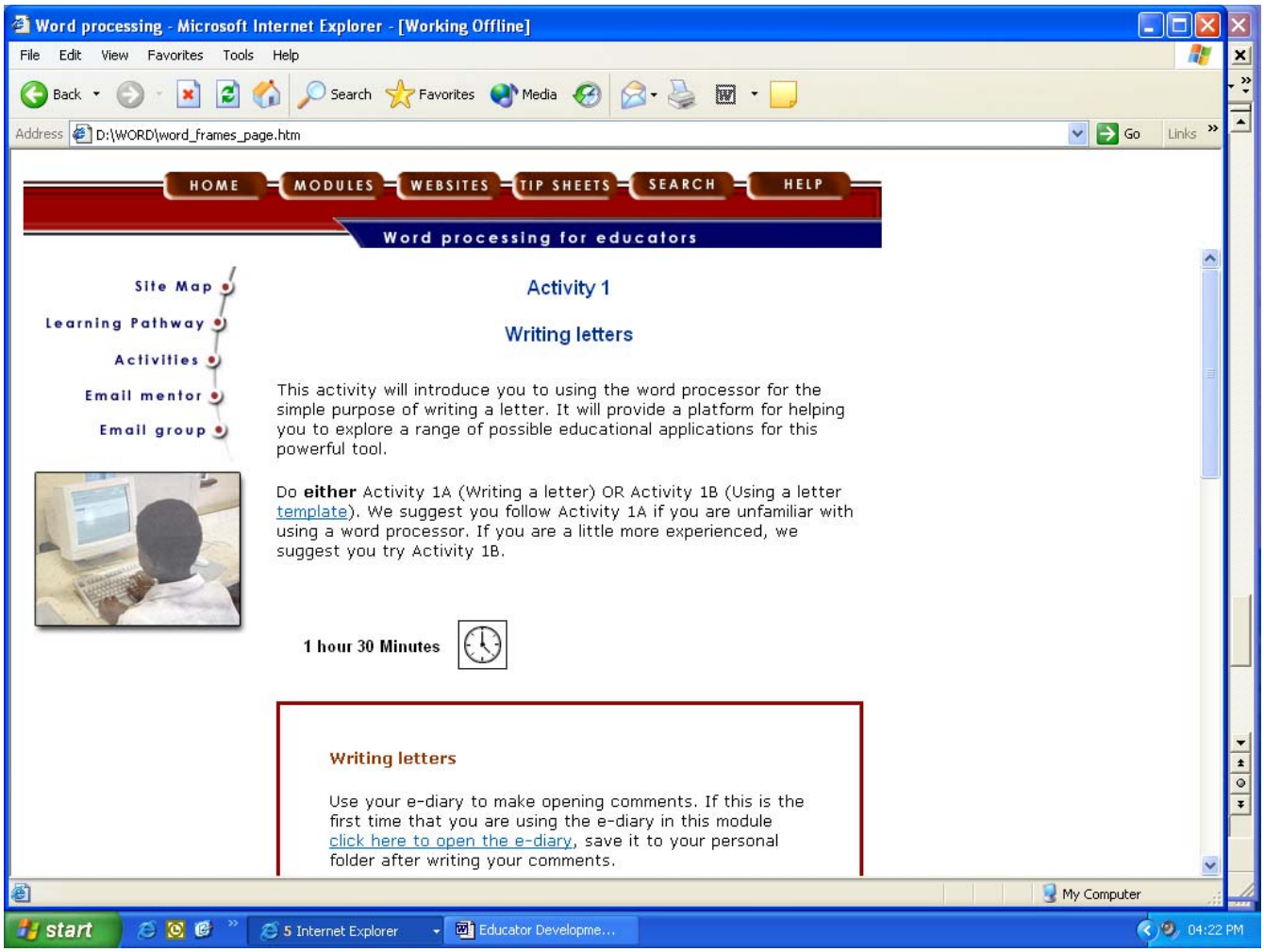
Educator Development Network (SchoolNet South Africa) **Evaluator:** Tina James	
Category	**Evaluation and Comments**
Brief Description	SchoolNet SA has a strong emphasis on educator training in South Africa. It has developed its own training material, which is made available in CD-ROM and through the SchoolNet SA Website. The material being reviewed here – a series of 15 modules covering various aspects of ICT skills development – was developed specifically for educators. It is used predominantly for in-service educator training, in schools where ICTs have been installed. The work is sponsored through a number of donor institutions and corporate foundations e.g. Telkom, Scope, IICD, IDRC and others. The Educator Development Network (EDN) is presently being updated and a new version of the learning materials should be available during 2003. The update is being done in collaboration with the South African Institute for Distance Education (SAIDE). SchoolNet SA is working with Direqlearn (*www.direqlearn.org)* to convert the materials to open source. This is being tested in collaboration with SchoolNet Nigeria. The course material is also presently being piloted with educators from ten African countries (African Teachers Network). CD-ROMs are prepared for specific projects, although the content is the same for all SchoolNet SA projects. CD-ROMs are couriered free of charge to all schools. The material is in the public domain – it is copyrighted by the South African National Department of Education and SchoolNet SA. The course strongly emphasises collaborative work and educators-in-training are immediately launched into communicating with fellow students, via e-mail, who are also undergoing the EDN training module. *"We are not learning to use computers; We are using computers to learn"* Apart from rewriting the Tip Sheets for open source, SNSA will be redesigning the course for accreditation through the South African Qualification Authority – the software could also be adapted for use / accreditation in other African countries.
Entry Level of Competence	The course assumes a basic knowledge of computers although a start-up module is included for complete beginners. It does however assume that the user has keyboard skills. A short introduction is given on how to use the mouse. There is no explanatory information on what a computer is or how it functions. The introductory module consists of 11 activities plus two assessment forms. It covers areas such as using Paint, a word processing package (MS Word), Internet and e-mails. Throughout the course trainees are required to create an 'e-diary', which allows them to record, in Word, their thoughts and feelings about the course and various activities.
Cost	• No cost for the Internet version. • Training is offered at ZAR 600 (US$ 82) per person per module – includes the e-learning component – mentor, group mailing list and database tracking. • Different rates are negotiable – contact SchoolNet SA for this.
Media	• Web-based. • CD-ROM.
Installation requirements	• Pentium 3+. • Microsoft Windows (the new version will run on open source). • System loaded easily and quickly. • Internet access required to participate in e-mail communications with other educators and with the mentor. The course could however be completed without Internet access if necessary, but probably only in a facilitated environment.
Pedagogical approach	• All courses are first presented in a face-to-face situation. Educators are equipped to drive their own learning, either through the use of the CD-ROM or online. • All self-assessments and course evaluations are sent to a small group of mentors by e-mail • Course materials can be accessed through the Website for individual learning (*www.school.org.za*)

Educator Development Network (SchoolNet South Africa) **Evaluator:** Tina James	
Content	• 15 modules, of which six are directly relevant to teaching basic computer skills to educators: • Newcomers' module for students with no computer background • Word processing for educators • Spreadsheets for educators • Use of the Internet (finding information, using Web resources, designing Web pages) • The other nine modules focus on teaching and learning strategies (2 modules), mathematics and science resources for teachers (4 modules), and ICT leadership and planning (3 modules). The latter could be very useful to educators to provide guidance on how to implement ICTs at the school level. It includes planning strategies and evaluation criteria for choosing software. • There is strong emphasis on learning just-in-time i.e. if the learner requires mouse skills at a particular point to complete a task (e.g. drawing a face in Paint) then a short tip sheet is introduced on using the mouse. If Word skills are required the learner is referred to a separate MS Word 2000 tutorial when it is needed. • Coverage of each of the areas has been specifically targeted to the educator audience, with examples reflecting how particular software such as word processing and spreadsheets can be used in a school situation. • The software assumes that the learner will make the effort to follow his/her own learning pathway and learn what s/he feels they need from the training. • Some areas are not covered e.g. creation of tables and more advanced features of Word, which could be useful to educators.
Interface	• There are several weaknesses in the user interface, although these are apparently being rectified in the update currently underway: • Screens make use of large amounts of text. This does not sustain interest in the learner and becomes tedious with repeated use. • Presentations are generally thorough, with good indications of expected times for activities, what to do next, tip sheets, etc. They are however not very imaginative. • No use is made of audio materials – it would have been possible to put some of the rather copious written text into audio format. This means that hearing impaired educators could use the full course. • No simulations or graphics are used. • Each of the modules has exactly the same look and feel, which causes confusion when one is 'jumping' between modules and activities • Some of the "back / next page" do not seem to work • The text is small throughout the modules with little variation in colour or presentation. This may make it difficult for use by anyone with slight visual impairment. • A standard HTML interface is used, so printing and saving are fairly straightforward.
Applicability to Context	• Language of instruction is English. • The major strength of this package is its adaptation specifically to educators. All the Spreadsheet and Word examples are directly related to school activities, and emphasis is placed on showing how particular skills can add value to an educator. • This package could easily be used in any English-speaking African educational institution.
User support	• There are several levels of assistance offered: • Help menus • Simple glossary of terms • E-mailing the mentor • E-mailing the group • Tip sheets, which provide detailed information on topics such as the mouse, the Internet, how to use Word, etc. • Instructions at the activity level on how to proceed with an activity.
Assessment and Feedback	• All assessments are based on activities carried out by the learners and which are sent as attachments to mentors. This encourages the use of e-mail communications, while building in learning on how to send file attachments, and how to use the various software packages. Many of the activities are based on school activities e.g. write a letter about your school, typing a list of administrative duties, etc. • A database administrative system has been developed which is accessible to the mentors (10 trained for each of the nine provinces in South Africa). The system produces report, and analyses student progress. SMS messages are also used by mentors to

Educator Development Network (SchoolNet South Africa) **Evaluator:** Tina James	
	remind educators to complete their courses. This has resulted in a higher retention rate.
Product support	Support in South Africa through SchoolNet SA. Direqlearn will in future be undertaking the marketing of the EDN software.
Interactivity	Throughout the course material there is a strong emphasis on collaborative and interactive learning through the ongoing creation of an e-diary that tests thoughts and perceptions (but simultaneously develops keyboard and word processing skills). In addition, learners are asked throughout the 15 modules to share their work with their mentor and with others doing the course. This is achieved through sending e-mails, with either messages and/or file attachments to others in the group. The system is set up in such a way that users are automatically taken to a blank e-mail, which is then used to send e-mails to other participants. Comments from previous trainees seem to indicate that this approach, which enforces very quick use of ICTs for communication does achieve the objective of teaching the fundamentals of ICTs as a communication tool.
Overall assessment	• The concept of using computers to learn, rather than using computers is sound. Unfortunately the present version is rather confusing to use – linkages do not always work, and the material is thorough but not presented very imaginatively. It would be more useful to evaluate the new version of this software to assess whether the inherent weaknesses have been corrected. • The major advantage of this material is that it has been developed by educators, for educators and therefore addresses the immediate needs of educators more effectively than many of the other packages reviewed.

Overall Ratings: Educator Development Network			
	Average Weight	**Total Weight**	**Maximum Weight Attainable**
Content	3.33	10	12
Interface	2.11	19	36
Applicability to context	2.17	13	15
User support	3	24	32
Assessment and feedback	3.71	26	28
Interactivity	3	15	18
Total		**107**	**141**
76% EXCELLENT SOFTWARE, RECOMMENDED			

Example of a Word-Processing Activity in the Educator Development Network Course Material



Electric Paper – ICDL **Evaluator:** Olof Hesselmark	
Category	**Evaluation and Comments**
Brief Description	Software covers the ICDL syllabus. It prepares the student for ICDL examination. Covers all seven modules. Total of 80 hours training.
Entry Level	A basic knowledge of the PC and computing concepts (for example an ability to use the keyboard and mouse).
Cost	Available in Ireland. €199, but prices for use in Africa might be negotiated.
Media	CD-ROM.
Installation requirements	Pentium 2-3 and above. The software is Windows-based.
Pedagogical approach	This course is designed for self-learning.
Content	• The course fully covers the requirements for ICDL certifications. • Educators may find it useful for training of trainers, as a reference tool at institutions and for short refreshers.
Interface	• Navigation tools include tools for moving forward and backward. Other tools are: o Skills assessment: Users assessment page. Allows user to take and view results of assessment; o Scores: Lists users scores per unit of course within a module. Similar to score history. • The learner can control the learning process fully. Start and stop anywhere using comprehensive interactive menus. • Good help function, but not context sensitive.
Applicability to Context	The language used is British English, but I found it rather complicated, with too many long words.
User support	• Help: The help function provides list of all available topics. • Local support only available if a local distributor can be found.
Assessment and Feedback	• The user is able to view and review performance. • The assessment process itself does not use simulators, in other words there are no questions based on simulators. • Learners however can view their score history.
Interactivity	• The interactivity is controlled by the software, and uses simulated sequences from actual software packages.
Overall assessment	Software is recommended but after considering options first. Not suitable for beginners in computers. Only for students with a basic understanding of computers.

Overall Evaluation Ratings: Electric Paper			
	Average Weight	**Total Weight**	**Available Total Weight**
Content	3.33	10	12
Interface	3.00	27	36
Applicability to context	1.50	9	15
User support	2.50	20	32
Assessment and feedback	3.57	25	28
Interactivity	2.20	11	18
Total		**102**	**141**
71%	**GOOD SOFTWARE, BUT CONSIDER OPTIONS FIRST**		

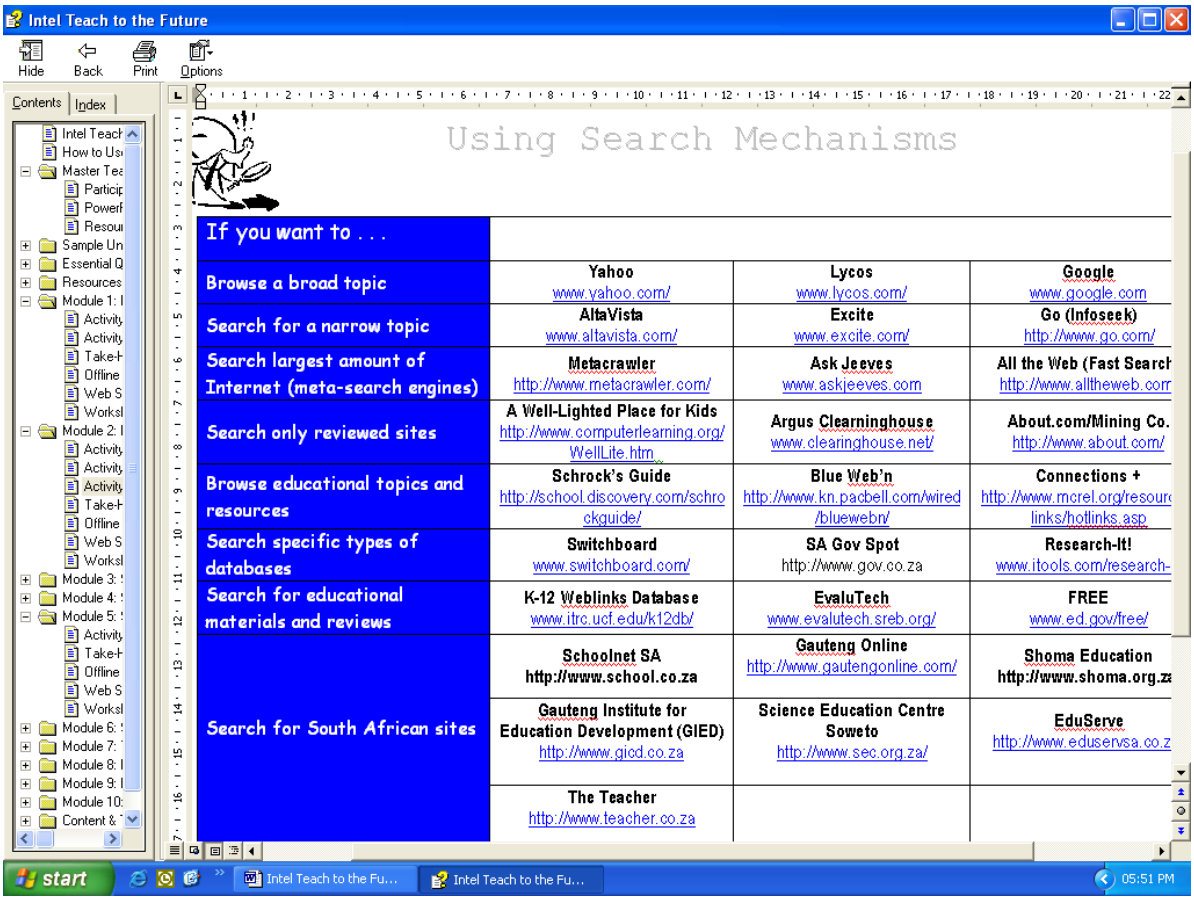
Intel ® Teach to the Future **Evaluator:** Tina James	
Category	**Evaluation and Comments**
Brief Description	This is a worldwide Intel® initiative to reach 500 000 educators by 2003. The material under evaluation was obtained through SchoolNet SA, which is the first to offer the Intel® Teach to the Future programme in Africa and the second in the southern hemisphere (Brazil is the other). The South African programme aims to train classroom educators in how to promote project-based learning and effectively integrate the use of computers into Curriculum 2005 (the South African outcomes-based learning curriculum). The goal is to reach 40 000 educators in three years. The Facilitator training course consists of 40 hours of hand-on training delivered through 10 modules. The original program was developed by the Institute of computer Technology (ICT) (*www.ict.org*) in the United States, but was adapted for use in South Africa by the Faculty of Education, University of Pretoria. The programme was only recently launched and a Website has been created: *www.teach.schoolnet.org.za.* The course has a strong emphasis on content development using a variety of Microsoft tools and Web-based resources. It is therefore not aimed at the computer illiterate educator, but rather one who has already developed some skills and requires a much higher level of technology use in the classroom. There are therefore no basic ICT skills training modules *per se,* but some extremely useful elements in expanding the use of ICTs e.g. how to create a list box in Excel, creating class materials for a mitosis lesson in PowerPoint, reducing the size of a file and/or images in a file, etc.
Cost	Not known, but probably free of charge to participating educators due to corporate sponsorship.
Media	• CD-ROM. • Website created for the programme. • Manuals for learners and facilitators.
Installation requirements	• Minimum of 32 Mb RAM • Must have access to the following: o Microsoft* Windows* 95, 98, 2000, NT, ME, or XP o Microsoft* Excel 2000 or above o Microsoft Internet Explorer 4.0 or above o MS Word / PowerPoint / Publisher / Excel 2000 or above o MS Encarta
Entry Level of Competence	Requires a higher than average basic knowledge of computer skills, and definitely keyboard and mouse skills. It would not be suitable for an educator who had never used a computer before.
Pedagogical approach	• Instructor-led, using the CD-ROM and learner manuals. This is based on research indicating that the face-to-face method of instruction does result in higher retention rates. The CD-ROM has to be used in conjunction with the training manual. • The course is not targeted specifically at educator institutions, but works with educators at the school level. • SchoolNet SA is undertaking the training in South African schools.

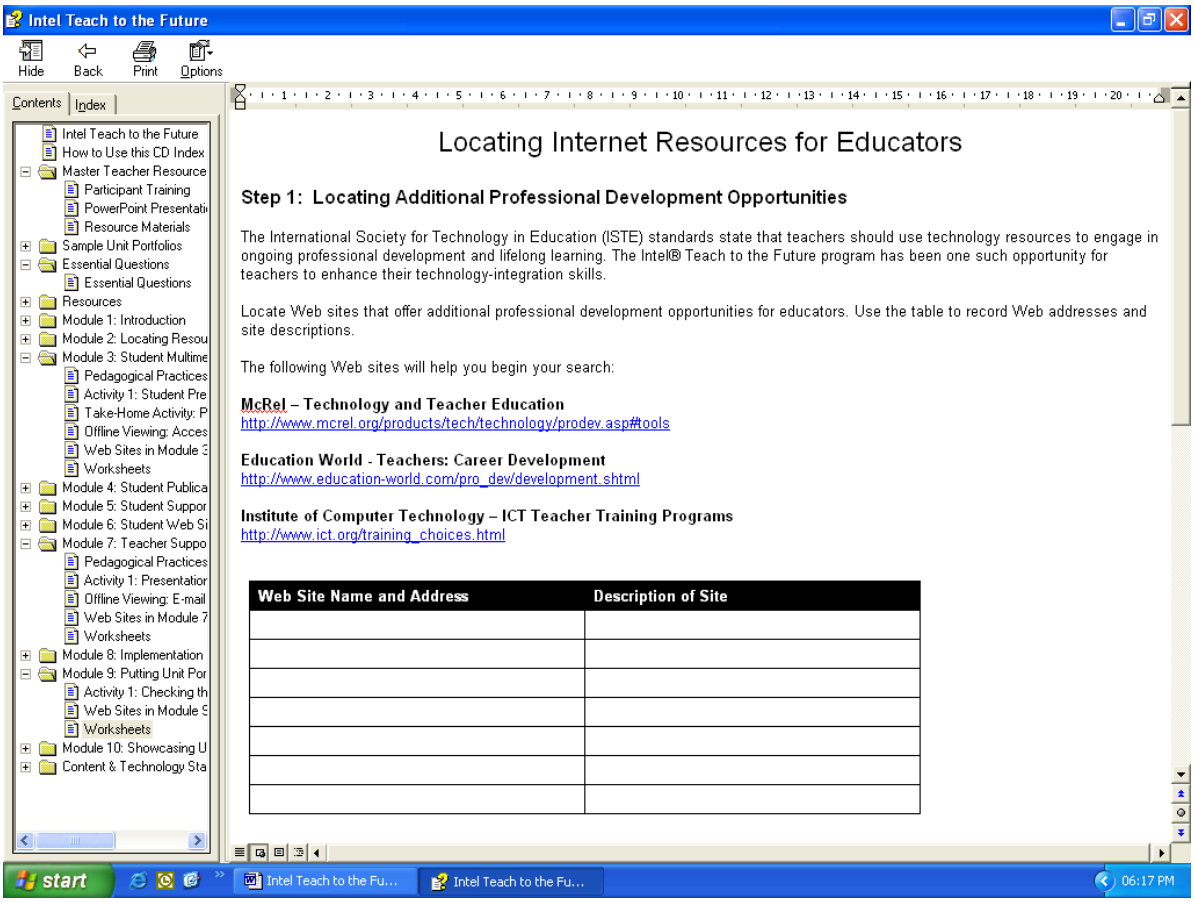
Intel ® Teach to the Future **Evaluator:** Tina James	
Content	The ten modules are: 1) The Big Picture 2) Locating resources for Unit Portfolios 3) Creating Learner Multimedia Presentations 4) Creating Learning Publications 5) Creating Learner Support Materials 6) Creating Learner Websites 7) Creating Educator Support Materials 8) Developing Plans for implementation 9) Putting Unit Portfolios together 10) Showcasing Unit Portfolios Excellent references to Web resources e.g. following the graphics route from the Web resources for special education, etc. Educators choose their own 'unit portfolios' that will be based on material the educator is teaching or wants to teach in the future. By the time the course is completed, educators will have in their possession lessons (including lesson plans, presentation materials, etc), samples of learner materials and finally assessment tools for multimedia projects and Websites with which these materials can be assessed. The educators themselves create all of these materials using various Microsoft applications.
Interface	• Navigation is straightforward and it is possible to move easily within and between the modules without getting lost. The comprehensive contents list is always displayed. • A very useful feature is the inclusion of a full index with keywords which make searching possible. Cross-referencing is excellent e.g. searching for graphic materials can be picked up in a number of ways. • It was particularly irritating that the CD-ROM presented for evaluation did not allow many of the hyperlinks to be followed through (the evaluator was warned of this, but it proved to be a frustrating exercise anyway) – hopefully this will be improved in the future versions. • All material is presented in text, with use of graphics where applicable. Very professionally presented with good use of colours. • Printing / saving is very easy and can be done throughout the course. • An easy interface to use, and though there is a predominance of text (with small fonts), it still had appeal.
Applicability to Context	• Language of instruction is English. • The course has been adapted for South African use, particularly the inclusion of South African resource materials. There is however not enough of it. • A major weakness is in the suitability of some of the learner and educator materials that are included – these are obviously focused on the American school situation and use examples that would be irrelevant in an African school setting e.g. American history, Websites referring to US schools. • There is also a section on US content and standards that is totally irrelevant in the African situation.
User support	• A comprehensive facilitator manual is provided, which is covers the materials for the ten modules but also includes additional materials on installation instructions for Excel, Windows XP, Adobe Acrobat Reader, Power Archiver; a glossary of terms. There is also a separate section on using Excel in the classroom, transferring files on the Internet. • The package is easy-to-use and at all times users have access to previous course material, a workbook, and a trained facilitator. • Support is provided in a face-to-face situation. This course could not be used for individual, distance learning.
Assessment and Feedback	• There are extensive activities throughout the modules, which are developed individually, collaboratively. • There was no evidence of any user testing or whether there is any form of testing / accreditation on completion of the course.
Product support	Through SchoolNet SA in South Africa. There is no presence as yet in any other African countries.
Interactivity	As the course is instructor-led, and done in a classroom situation, the levels of interactivity are through the completion of activities on the CD-ROM (and stored on the hard drive).

Intel ® Teach to the Future **Evaluator:** Tina James	
Overall assessment	• A very professionally presented, comprehensive course, both in terms of quality and breadth of coverage of materials. It may however be too sophisticated to be used in its present form in many African institutions. For example, the material covered in a 40-hour course seems appropriate for users with extensive Web searching experience but may require much more time in an African setting. The piloting in South Africa should provide answers as to its suitability. • This courseware is probably more advanced than any of the other courses assessed in terms of content development and should definitely appeal to those who require a greater challenge.

Overall Ratings: Intel Teach to the Future			
	Average Weight	**Total Weight**	**Maximum Weight Attainable**
Content	4.00	12	12
Interface	2.89	26	36
Applicability to context	1.67	10	16
User support	2.19	17	32
Assessment and feedback	2.29	16	28
Interactivity	2.40	12	18
Total		**93**	**142**
65%	**FAIR CONSIDER OTHER OPTIONS FIRST IF LOOKING FOR BASIC ICT SKILLS TRAINING.**		

Examples of Presentation and Layout on the Intel® CD-ROM





ISV – ICDL **Evaluator:** Olof Hesselmark	
Category	**Evaluation and Comments**
Brief Description	Software covers the ICDL syllabus. It prepares the student for the ICDL examination. Covers all seven modules.
Entry Level	A basic knowledge of the PC and computing concepts (for example an ability to use the keyboard and mouse).
Cost	Available in Ireland and the UK. £150-170, but prices for use in Africa might be negotiated.
Media	CD-ROM
Installation requirements	Pentium 2-3 and above. The software is Windows-based.
Pedagogical approach	This course is designed for self-learning. It has a detailed step-by-step approach. It is very easy to use and comprehensive. It uses a lot of illustrations, but no voice in the tested version. It is more like a textbook on a CD.
Content	• The course fully covers the requirements for ICDL certifications. • Educators may find it useful for training of trainers and as a reference tool at institutions and for short refreshers.
Interface	• Navigation tools include tools for moving forward and backward. Other tools are: o Skills assessment: Users assessment page. Allows user to take and view results of assessment. Very good test questions o Scores: Lists users scores per unit of course within a module. Similar to score history. • The learner can control the learning process fully. Start and stop anywhere using comprehensive interactive menus. • The help function is available from the software, and covers all areas related to using the course.
Applicability to Context	• The language used is good British English, but sometimes rather complicated language.
User support	Local support only available if a local distributor can be found.
Assessment and Feedback	• The user is able to view and review performance in a very simple way. Knowledge can be pre-tested before each module, and learning progress is measured against the scores obtained before. This gives an excellent learning feedback. • The assessment process itself does not use simulators, in other words there are no questions based on simulators
Interactivity	The interactivity is limited to answering a sequence of questions, and to branch off for simple exercises.
Overall assessment	Good software. Not suitable for total beginners. Only for students with a basic understanding of computers.

Overall Evaluation Ratings: ISV ICDL			
	Average Weight	**Total Weight**	**Available Total Weight**
Content	2.00	6	12
Interface	2.56	23	36
Applicability to context	1.50	9	15
User support	3.00	24	32
Assessment and feedback	3.57	25	28
Interactivity	2.60	13	18
Total		**100**	**141**
71% FAIR BUT OTHER OPTIONS SHOULD BE CONSIDERED			

LearnScapes (South Africa) **Evaluator:** Tina James	
Category	**Evaluation and Comments**
Brief Description	LearnScapes, a small South African company (*www.learnscapes.co.za*), was established in 1995. Its focus is on creating electronic learning materials, and more particularly on creating a modular learning platform that could be easily used and updated for use in a number of training environments. The primary focus for the LearnScapes product is HIV/AIDS training into a number of predominantly corporate environments. Since the course is computer-based, users need to receive basic computer skills training to enable them to use the platform for training courses in a number of areas. The intention is to expand this to the development of broader life skills courses such as domestic abuse, managing money, and drug and alcohol abuse. Although the product was not specifically developed for educators, it was included in the evaluation because of the suitability of its basic computer literacy modules and the existence of its HIV/AIDS materials, a topic that should be of major concern to most African educators. There may be possibilities to negotiate re-versioning of some of these materials for use in teacher training institutions.
Cost	There is a 40% discount for schools, but educational institutions such as teacher training colleges would be excluded from this discount. All existing projects have been funded through corporate support programmes. Several pilot projects are running in Southern African schools. The annual licence fee includes quarterly upgrades and support services (telephonic and face-to-face within 125km radius, thereafter a charge would be levied to cover travel costs). Local agents have been appointed in several Southern African countries. Costs for schools – typically ZAR 37 500 per year (about US$ 5 150) Costs for a teachers training college – ZAR 58 000 per year (about US$ 8 000) It is not known whether further discounts could be negotiated for specific development projects.
Media	Requires computers to be networked. Software is loaded on a local server and basically provides an Intranet environment for the institution. Content may be used by as many users as required, as this is part of the annual fixed licence costs.
Installation requirements	• The learning platform was developed in Visual basic / MSDE / Sequel. It runs through an Internet browser. • Windows. • Independent of any telecommunications requirements. • Software is loaded by the agents, and not by the institution itself. As the software is proprietary, no updating of materials can be done at the educational institution. Any customised updates would be included in the annual licence fee.
Entry Level of Competence	No previous computer skills required. The course includes fundamental computer skills training e.g. mouse skills and keyboard skills. The course material is likely to be suitable for teenagers and adults.
Pedagogical approach	Course material is developed to allow individual, self-driven instruction. A blended approach is however recommended i.e. a combination of facilitated and individual learning. The material could be used as a stand-alone package.
Content	• Areas covered: o Mouse skills o Keyboard skills o Beginning / intermediate /advanced computer skills (components, how they work, troubleshooting and maintenance, concepts) o Word processing (Word) o Spreadsheets (Excel) o Outlook and PowerPoint (planned) • All course material will comply with the South Africa Qualifications Authority (SAQA) standard for end-users. It is specifically designed to meet the objectives of outcomes-based education. • The software is not customised to specifically meet the needs of educators in terms of content creation, but it will provide a solid background to develop competent computer usage.

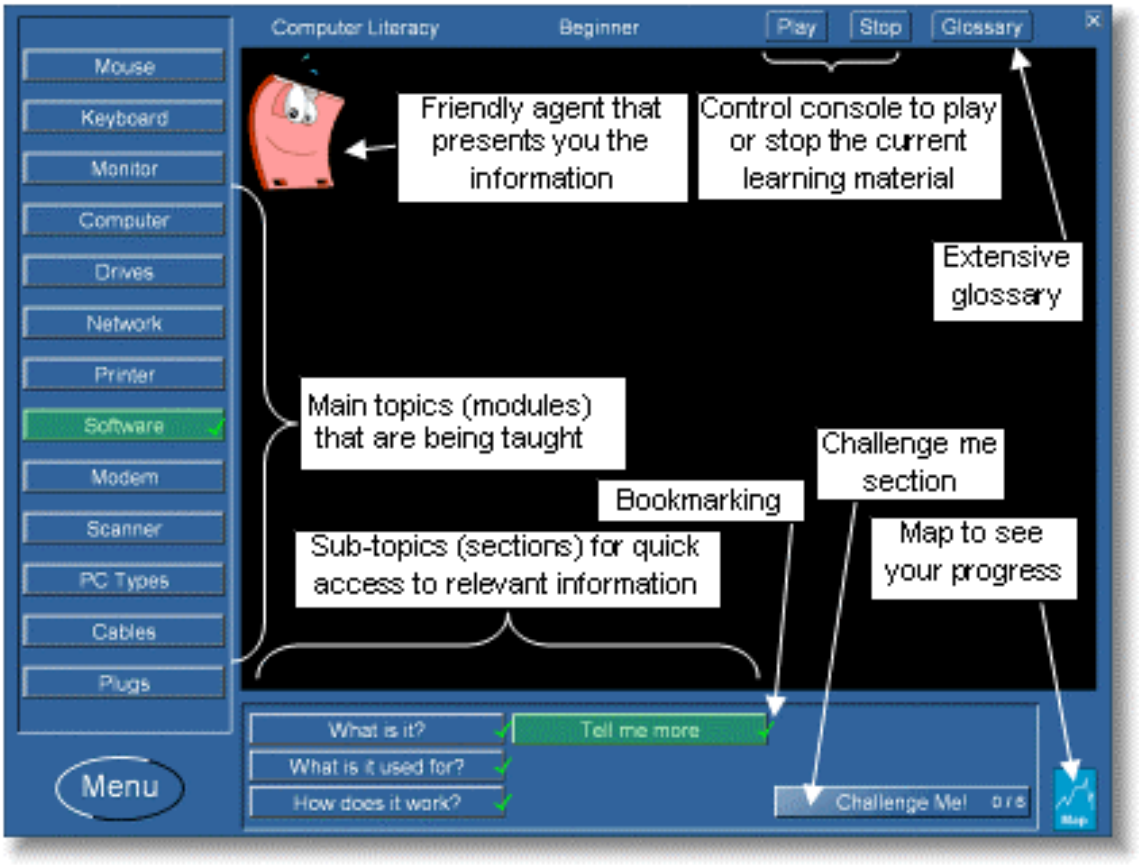
LearnScapes (South Africa) **Evaluator:** Tina James	
	• The course material is well planned and covers all the areas required to provide a basic background in computer skills. It covers basic topics such as how to wire together your computer, how to use the Internet, the workings of a network, etc. The five components covering the computer skills sections were planned to take 5 hours but in reality users need between 10 – 15 hours, which includes playing the 'interactive games' (tests) and recalling previous work.
Interface	• Navigation is easy as at all times. The headings of other course sections are visible while the training programme is running. The course material is presented in a "TV-like" box surrounded by buttons and icons. Users can easily move between sections and modules, and gain access to a glossary of terms through an icon. • Details on progress can be obtained from the database showing test scores and completed modules. • The text font is generally large and could therefore be used by those with some visual impairment. • The audio component is varied, and spoken at a reasonable pace that could be understood by those for whom English may not be a first language. • Colour choice is simple but effective (buttons in blue, TV screen in black or white). Interest is added through the use of the cartoon characters associated with each section of the training module. • The objectives of each section are clearly spelt out. • There is no print/save option. Reinforcement of lessons can be done through the hardcopy manuals. • It may be difficult for hearing-impaired users to follow the instructions, as verbal instructions are not always repeated as text instructions.
Applicability to Context	• Language of instruction is English. Voice-overs have been done by South African actors and actresses. Most African educators who are conversant in English should easily understand the audio component of the course material. • There are a few South African terms in use e.g. the use of the word 'stiffy' drive to describe the 3 ½ inch drive, but on the whole the product is culturally neutral in terms of examples and use of terminology. • Each module makes use of an easily recognisable cartoon character, each with its own recognisable voice and accent (see example below). There is a mix of male and female voices.
User support	• Workbooks are provided for all courses. • The package is easy-to-use and at all times users have access to previous course material, a workbook, and a trained facilitator. • Users can access a database to see how they have scored on each of the tests. It is possible to repeat these tests at a later stage (and experience has shown that users enjoy these tests and keep going back to them) • There is no helpdesk facility – all support is provided through either local agencies or the Gauteng-based offices in South Africa. • Verbal instructions are given to users on how to proceed through the course materials. The layout of the course material is such that a user is always aware of where s/he is in the training programme.
Assessment and Feedback	• User tests are included in each module. These are interactive multiple-choice questions or specific actions that have to be carried out by the user. In the case of material on the use of the Internet, the user is required to enter information on addresses, domain names, etc – once correct, the student can move onto the next question. • LearnScapes is backed up by an administrative database that provides details at various levels – to the user on the modules successfully completed, tests passed, number of correct answers etc. Facilitators / administrators have access to a password-driven database that gives a history and overview of the registered users, their progress, test results etc. This would be particularly useful when used for a large number of users in an institution. User progress can therefore be monitored. • Course facilitators can print out pro forma certificates and reports from the database.
Product support	The product is developed and supported from the LearnScapes offices in Johannesburg, South Africa. The annual licence fee includes technical and product support, as well as customisation of the product for individual clients e.g. production of customised hardcopy training manuals, modification of modules to suit the client's needs.

LearnScapes (South Africa) **Evaluator:** Tina James	
	Pilots are currently being run in other Southern African countries - local agents have been appointed in Harare (Zimbabwe), Windhoek (Namibia) and Mbabane (Swaziland). Local technical and product support is therefore available in these countries. Five schools are being supported in Namibia. Gaborone (Botswana) is supported through telephonic support. Training is provided to facilitators on how the system operates, and how to offer the training course.
Interactivity	As the whole course is self-driven, the learning experience is under the control of the learner. The use of interactive testing and recall of information at the end of each section is based on interactive learning. Some simulations are used where the user is required to, for example, link cables to various components of the hardware. Interactivity is generally good.
Overall assessment	Overall, the course materials are very well presented, very usable and provide a thorough grounding in basic computer skills. The use of the cartoon characters is clever and gives it a culturally neutral look-and-feel. The major disadvantage is that the present product can only operate in a networked environment. Cost may also be a factor. This may override the excellent quality of the product and the availability of the administrative database capability that would definitely add value in any training institution. The possibility of re-versioning this product for educators could be considered.

Overall Ratings: LearnScapes			
	Average Weight	**Total Weight**	**Available Total Weight**
Content	3.67	11	12
Interface	3.56	32	36
Applicability to context	2.17	13	15
User support	2.75	22	32
Assessment and feedback	3.71	26	28
Interactivity	3.40	17	18
Total		**121**	**141**
86% EXCELLENT SOFTWARE, HIGHLY RECOMMENDED			

Example of Presentation and Layout in a LearnScapes Module

http://www.learnscapes.co.za/pr_complit.htm



Example of Learning Management System

http://www.learnscapes.co.za/pr_complit.htm

Mindleaders ICDL (Kenya) **Evaluator**: Leonard Mware	
Category	**Evaluation and Comments**
Brief Description	This curriculum consists of seven Courses: o Module 1 Basic Concepts of IT (3 hours) o Module 2 Using the Computer and Managing Files (4 hours) o Module 3 Word Processing (7 hours) o Module 4 Spreadsheets (8 hours) o Module 5 Database (4 hours) o Module 6 Presentation (7 hours) o Module 7 Information and Communication (5 hours) **Notes:** This course does not have audio or video clips. However, there is reference on how to enable/disable audio but this did not work in the online version. • The software can be adapted for any class situation for teacher training in a teacher training college or in-school (in-service) training. • The software is available on CD-ROM for LAN/Intranet.
Entry Level	Any student who is post-primary and has a good understanding of English can go through the course comfortably.
Cost	The course is mostly available online. The charge for the seven modules when taken online is KES 6 000 (approximately US$75).
Media	The software is installed on Skillsoft Ltd's Intranet server. However, Skillsoft Ltd prefers students using Internet access to their courses. The advantage here is that by making it available over the Web, Skillsoft Ltd can afford to charge $75 for the 7 modules.
Installation requirements	Any computer with access to the Internet and a good browser should be able to access the course.
Pedagogical approach	Though the course is meant for self-learning, instructor-led sessions are partly recommended.
Content	• The topics are fully covered, but the package lacks creativity and self-learning tools such as simulations. • Training facilitators may have to intervene often, which would not make it ideal for an in-service school based teacher development, especially if the school is remote or far from the educator / training institution. • The course does not include audio or video clips in its content, thereby making it less adaptable for the impaired.
Interface	Navigation tools include tools for moving forward and backward. Other tools are: o Tools menu: o About this course o Course content: Allows navigation to a particular unit o Certification: Info about ICDL certification o Printing exercise: Allows printing of exercises o Accessibility: Allows user to view text-only course. Useful for when used with screen-reading programs for visually impaired o Course topics: User can move to specific unit/module o Glossary: Useful terms. Similar to jargon list. o Skills assessment: Users assessment page. Allows user to take and view results of assessment o Scores: Lists users scores per unit within a module. Similar to score history. o Evaluate this course: provides user with ability to evaluate the course and mail evaluation report to Mindleaders (developers of course) o Master topics: Lists all courses currently available o My preference: allows user to change font size, themes and multimedia options. User can decide to disable sound and video (though the function did not appear to work when we evaluated the course) Accessibility: Allows user to view text-only course. Text-only interface is useful when used with screen-reading software for visually impaired. The learner is not fully in control of the learning process. No pre-assessment was available and no facility for setting up a learning tracking was available.

Mindleaders ICDL (Kenya) **Evaluator**: Leonard Mware	
	The help function is a long list that you need to scroll through when in need of help.
Applicability to Context	No information is available as regards any form of customisation for the different context.
User support	• Help: The help function provides a huge list of all available topics. The user must know what s/he needs and then scroll through it. This may not be very user-friendly. • Local support from the supplier is readily available.
Assessment and Feedback	• Through the tools menu, the user is able to view and review performance. • The assessment process itself does not use simulations, in other words there are no questions based on simulations. • The learner however can view his score history via the tools menu.
Interactivity	The level of interactivity is minimal with the course depending mostly on the ability of the learner to read through the text and use forward and backward buttons.
Overall assessment	The course is fairly good but must be used in areas with high levels of educator support.

Overall Evaluation Ratings: Mindleaders			
	Average Weight	**Total Weight**	**Available Total Weight**
Content	2.67	8	12
Interface	2.56	23	36
Applicability to context	2.00	12	15
User support	1.88	15	32
Assessment and feedback	2.14	15	28
Interactivity	2.40	12	18
Total	**2.21**	**84**	**141**
60 %	**FAIR BUT CONSIDER OTHER OPTIONS FIRST**		

Monash Learningfast - ICT Skills Benchmark (Australia / South Africa)	
Category	**Evaluation and Comments**
Brief Description	The ICT Skills Benchmark™ is a certification programme developed by the Australian Monash University, which has established a strong presence in South Africa as a distance learning institution. The eight -module Benchmark measures skills and competencies against Australian Training Standards covering essential ICT topics. Assessment includes pre and post-tests with completion certificates provided for results over 80%. A free evaluation session can be set up by contacting LearningFast. *http://www.za.learningfast.com/* The course consists of eight modules: • Competency 1: Information Technology Concepts • Competency 2: The functions of a Personal Computer • Competency 3: The Internet and Networks • Competency 4: Searching the Internet Effectively • Competency 5: Word Processing • Competency 6: Spreadsheets • Competency 7: Presentations and Drawings • Competency 8: Databases/Filing Systems In addition, there are a number of additional facilities in the LearningFast Programme: LearningFast also presents various other tools such as an E**lectric Library** (Australian focused and no plans as yet to develop African content), Web authoring tools for which training can be provided, and of particular interest to educators – the **Infopresenter**. This tool creates a virtual classroom and delivers presentations over the internet and allows for collaborative learning between participants and the presenter**.** Content sources include PowerPoint or HTML slides supported by an electronic whiteboard. All can be viewed seamlessly at 28kbs. Presentations, seminars or classes can be delivered live or from an archived library, providing flexibility to view presentations on demand.
Cost	The costs vary depending on the number of users. Details are included at the end of the narrative evaluation for South African users. Use in other countries will need to be negotiated, and could be managed from South Africa or Malaysia.
Media	• Available online. • Could be put on CD-ROM and loaded on an intranet (and could be negotiated) • Can be operated on a standalone PC, or a networked PC lab arrangement.
Installation requirements	• Does not require any of the Microsoft software applications – simulations are used throughout. • Reasonable Internet access speeds are required – it was tested at 29.2 and 40 kbps on a shared dialup modem. Loading speeds were remarkably quick considering the amount of graphic content. – apparently this is because it is based on the server from Monash University in Johannesburg, • Software could be loaded on an intranet to save online access costs.
Entry Level of Competence	No previous computer skills required. Some keyboard and mouse skills would be required. The course material is suitable for teenagers and adults.
Pedagogical approach	Course material is developed to allow individual, self-driven instruction. However the existence of an administration module does allow a facilitator to keep track of training progress in an institution. The course is self-explanatory and requires no facilitation.

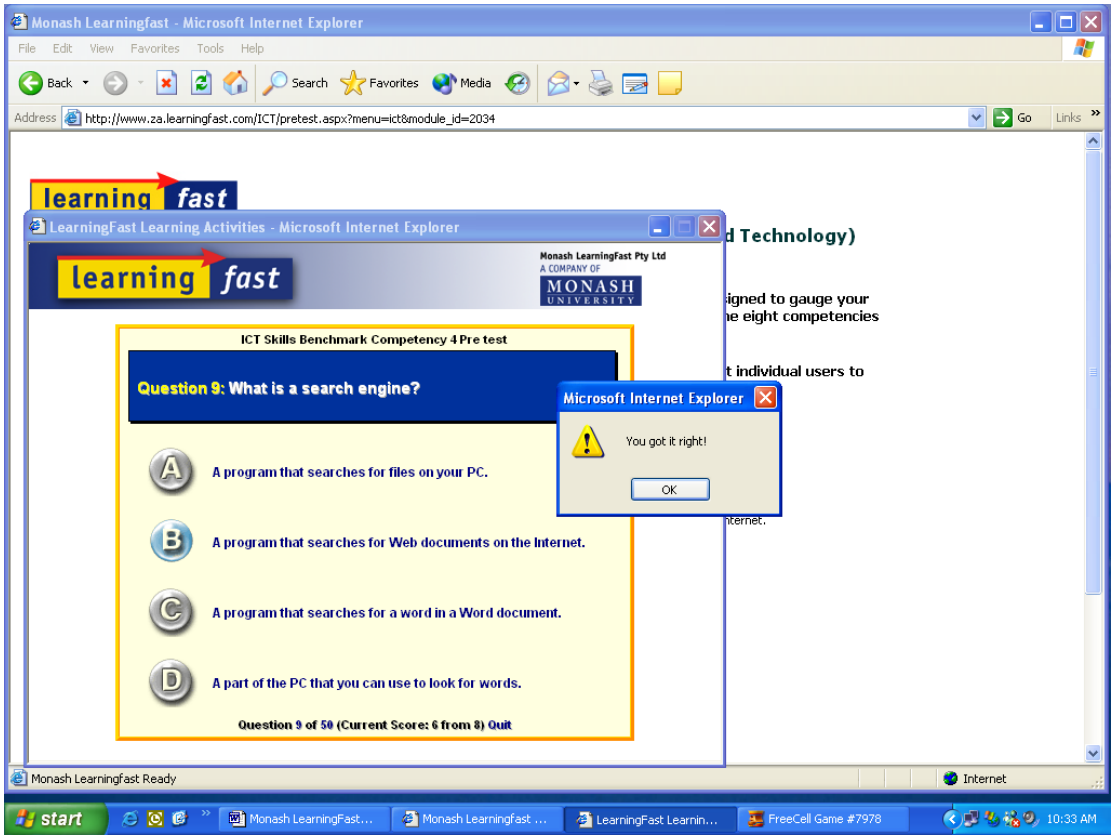
Monash Learningfast - ICT Skills Benchmark (Australia / South Africa)	
Category	**Evaluation and Comments**
Content	• The material is very professionally presented, with a thorough coverage of the material required for basic ICT skills literacy. • The inclusion of the pre-test assessment (a series of multiple choice questions) was useful in identifying training gaps, but was also rather fun to complete (for a relatively experienced ICT user). • Objectives are clearly spelt out for each section under study. • Learners are given many choices in terms of how they wish to view the content – audio on/off; Learn mode, which included the completion of simulated exercises; Show mode, which allow the learner to control how fast they wish to view the content with no simulations, and then test mode, which tests the learner. At all stages work can be printed or exited. • All course material will eventually comply with the South Africa Qualifications Authority (SAQA) standard for end-users (which is fairly similar to the Australian Standards).
Interface	• Navigation is easy as at all times and the user can control whether s/he wishes to move forwards, back or exit. • Audio can be turned on and off – the audio did increase loading time and I eventually found it too slow for comfort and switched it off. • A time indication is given for each section of each module, a useful indicator of a learner's progress. • All screens can be printed and the option is clearly indicated. • Good use of boxes, colours and the layout is excellent. A pleasure to use. • Where learners have to insert information, or need alerting to a part of the simulation, flashing arrows are effectively used. • The content text boxes for each screen could possibly have been made larger and more prominent. They do tend to get lost when a number of Windows boxes are open. Possibly a larger font and bolder text/fill in a different colour would have improved this • Learners can access a menu box called " My Learning Path" which stipulates which modules should be completed based on the pre-test results.
Applicability to Context	• Language of instruction is English. Audio presentations have been done in 'neutral' Australian English with no evidence of a strong accent that might create problems for African users. The course material can be used as easily without the audio component. • Examples were neutral and did not show a particular Australian bias. • Although the course is only presented in English, the possibility of preparation in other languages could be considered.
User support	• A Help facility is provided online, but this could not be accessed • In the Tests, there is a "Tip" button that guides users to producing the correct answer • The package is so easy-to-use that there does not appear to be a lot of need for extensive user support.
Assessment and Feedback	• User tests are included in each module. These are interactive, multiple-choice questions or simulations requiring the learner to complete specific tasks in a step-by-step fashion. • All test results can be viewed – for pre-tests, post-tests. The learners' results are indicated for each section undertaken to date (even incomplete ones). It also indicates whether learners have run through the materials in "learn", "show" mode, and whether any printing was done. A useful facility. • There is an administration support module that could not be accessed in the evaluation version, but which allows the addition of new users, access to the database with all user results, and the option to display these results in Excel format. It also displays the user status.
Product support	Provided through Learningfast, the agents based in Cape Town, South Africa.
Interactivity	The learning experience is totally under the control of the learner, with high levels of interactivity. The use of interactive testing and recall of information at the end of each section is based on interactive learning. Many simulations are used.
Overall assessment	• An excellent package with the added benefit of possible accreditation on completion of the course, although an Australian accreditation may be problematic in some African countries. Overall, the course material is excellent, easy-to-use, and should give learners a good grounding in the basics of ICT skills. Although it is not specifically geared towards educators, the course materials should provide enough interest in

Monash Learningfast - ICT Skills Benchmark (Australia / South Africa)	
Category	**Evaluation and Comments**
	developing ICT skills and provide an excellent grounding. • A highly recommended software package that was fun and a pleasure to use.

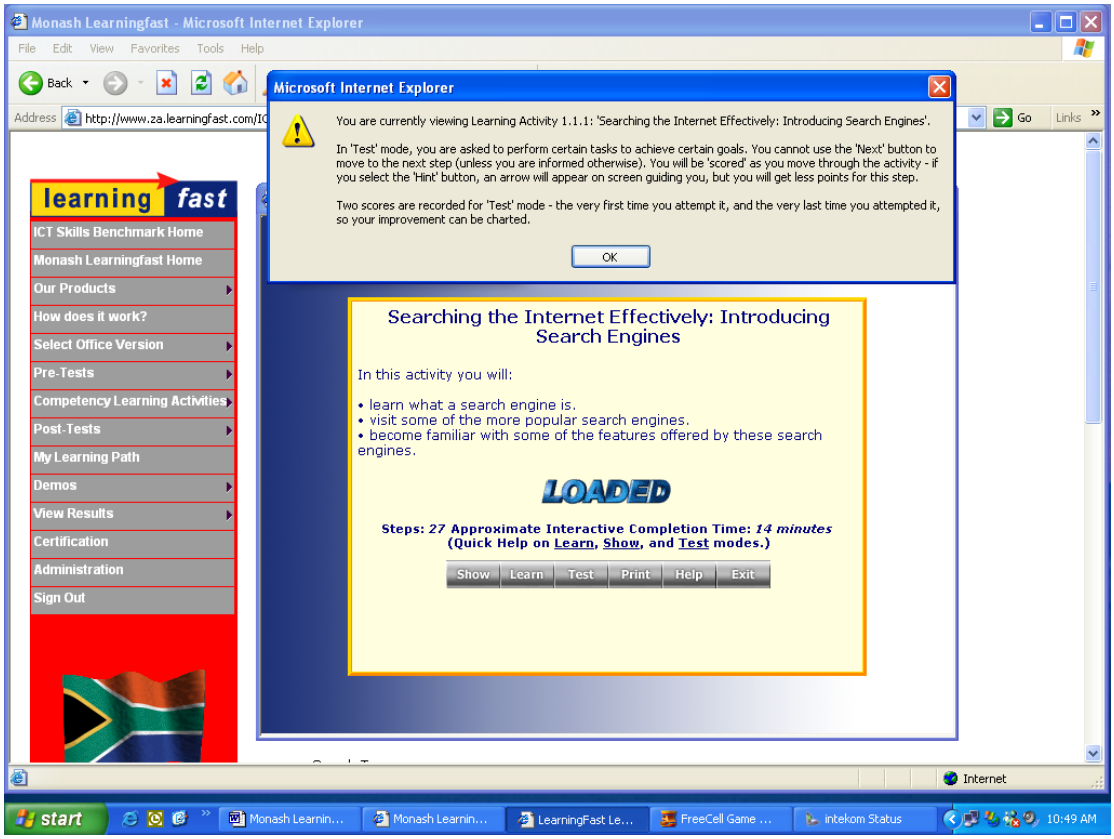
Overall Ratings: Monash ICT Benchmark			
	Average Weight	**Total Weight**	**Available Total Weight**
Content	4.00	12	12
Interface	3.67	33	36
Applicability to context	2.00	12	16
User support	3.50	28	32
Assessment and feedback	3.86	27	28
Interactivity	3.40	17	18
Total		**129**	**142**
91%	**EXCELLENT SOFTWARE, HIGHLY RECOMMENDED**		

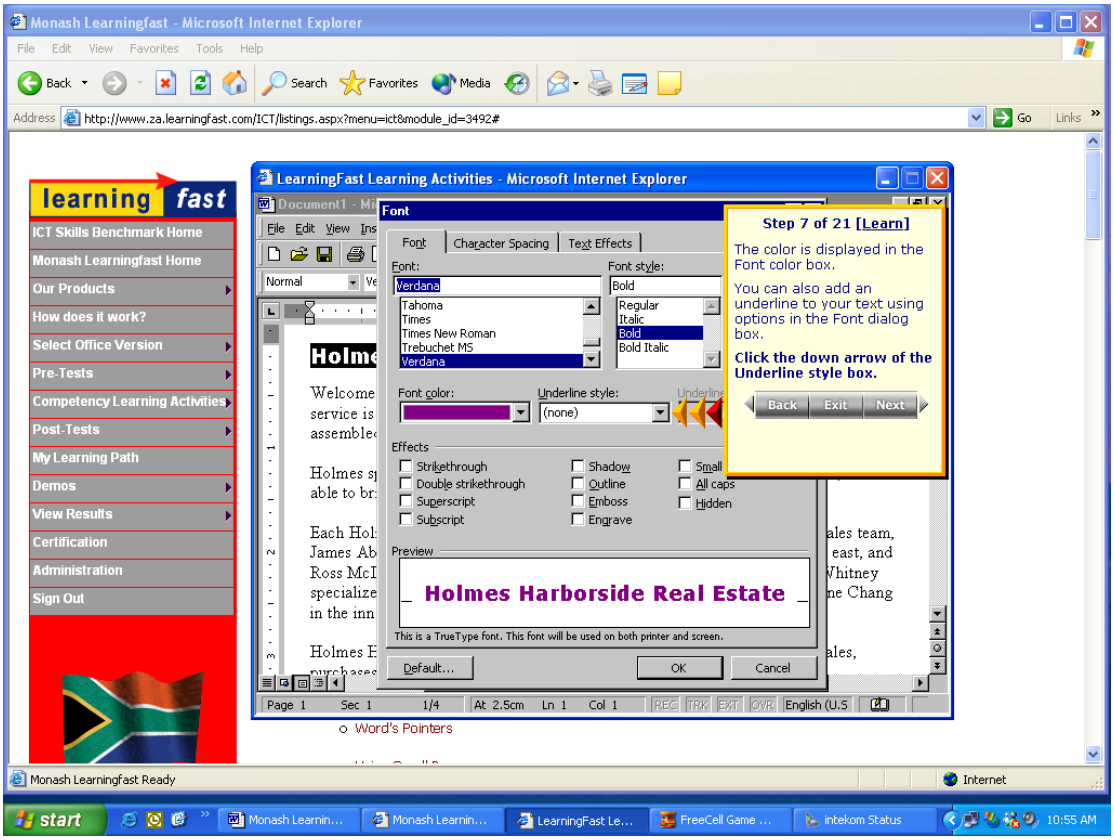
Pricing Structure for the Monash ICT Benchmark

Example of a Pre-Test Assessment with Confirmation of Correct Answer



Examples of Presentation and Layout in a Learningfast Module





NETg ICDL (Kenya) **Evaluator:** Leonard Mware	
Category	**Evaluation and Comments**
Brief Description	• This curriculum introduces the learner to the basic physical make-up of a personal computer and covers some of the basic concepts of Information Technology (IT) such as data storage and memory, the context for computer-based software applications in society, and the uses of information networks within computing. • The learner also gains an understanding of how IT systems are found in everyday situations, and how personal computers can affect health. • The learner is alerted to some of the security and legal issues associated with computers. • This curriculum consists of 7 Courses: o Module 1 Basic Concepts of IT o Module 2 Using the Computer and Managing Files (5 hours) o Module 3 Word Processing (8 hours) o Module 4 Spreadsheets (8 hours) o Module 5 Database (5 hours) o Module 6 Presentation (8 hours) o Module 7 Information and Communication (8 hours) **Notes:** This course has an UK English Audio and American English Audio versions. • **Accreditation:** NASBA credits: 4 CPE Credits Per Course. Learners earn credits for some American universities. This could be attractive to most learners. • The software is available in Kenya through local distributors, Learning Resources Ltd (*www.learningresources.co.ke)* • The software can be adapted for any class situation for teacher training in a teacher training college or in-school (in-service) training. • The duration of the course per module is short enough to make learning interesting and long enough to cover the subject.
Entry Level	Though the entry level in this case is listed as above 16 years, experience has shown that even younger learners can master ICDL.
Cost	• Through local dealership, it is possible to buy the software in local currency. • The local distributor advises that ongoing licensing is a cheaper and better option; this may be a one to three year licensing agreement. Once-off sales are also possible.
Media	Most institutions currently using ICDL have installed it on corporate Intranets or standalone PCs with no need to access the Internet, the reason being that accessibility through the Internet is still unreliable in Kenya. At the same time few people can afford paying for Internet access from home or cyber cafés for the entire course duration.
Installation requirements	• Slow computers may be irritating to learners. Interactive courses such as the NETg ICDL require fairly good memory space (at least 64MB and above) and speeds that come with Pentium 3s. • The software also includes an option that allows for downloading of courses for off-line learning, giving it an advantage for links with poor connectivity.
Entry Level of Competence	• For educators, an entry level of at least 12 years of schooling is recommended. This is purely for professional reasons. • However, non-educators and youths are known to have completed ICDL with lower education entry levels. Entry level is therefore not a major issue with this software.
Pedagogical approach	• This course is designed for self-learning. However, most institutions prefer blended learning. • With its inbuilt ability to support different learning paths through pre-assessment, educators are able to customise different levels to different learners.
Content	• The course fully covers the requirements for the ICDL certification. • Educators may find it useful not only for the training of trainers' sessions but also as a reference tool at institutions and for short refreshers. • Use of simulations to explain concepts and in assessment is a major advantage of the software.
Interface	The course provides navigation to the following: o Learning Track: Allows users to create personal learning tracks containing only the topics they need to learn o Fast Track option: Allows searches to specific topics within the course

NETg ICDL (Kenya) **Evaluator:** Leonard Mware	
	o Utilities: Notepad and print screen option o View: Course Map, Topic Index, Fast track o Help: Provide access to Course map, Tutorial about using NETg interface, Quick help, Start-up options, User preference (allow user to customise audio, font size and type, feedback option, tool tips, emphasis pointer type (use a simple arrow or a floating text box) o The above navigation aid puts the learning process under the control of the learner. The learner is capable of charting out his/her own training path and hence avoids boredom that leads to disinterest, something common with many courses. • The graphics and colours used are light background with dark text. Through the Help function, the user can change the font size and colour to suit his/her requirements – a major advantage for users with some degree of visual impairment or colour blindness.
Applicability to Context	• Two types of English are catered for: UK English and American English. However, no option exists for localising content or audio.
User support	• Help: Provide access to Course map, Tutorial about using NETg interface, Quick help, Quick help, Start-up options, User preference (allow user to customise audio, font size and type, feedback option, tool tips, emphasis pointer type (use a simple arrow or a floating text box). • Local support from supplier is readily available.
Assessment and Feedback	• Both Pre- and Post- assessments are provided for in the course. It is possible to build a learning track after a Pre-assessment thereby cutting down on training time. • The learner has access to his assessment results and training history.
Product support	Local support available.
Overall assessment	This course is one of the best designed in its category. It offers the user maximum control of the Learning Path by use of Learning Track and Assessment feedbacks.

Overall Evaluation Ratings: Netg ICDL			
	Average Weight	**Total Weight**	**Available Total Weight**
Content	3.33	10	12
Interface	3.00	27	36
Applicability to context	1.50	9	15
User support	2.50	20	32
Assessment and feedback	3.57	25	28
Interactivity	2.20	11	18
Total		**102**	**141**
83%	**EXCELLENT SOFTWARE, HIGHLY RECOMMENDED**		

Smartforce – ICDL (Kenya) **Evaluator:** Leonard Mware	
Category	**Evaluation and Comments**
Brief Description	Software covers the ICDL syllabus. It prepares the student for the ICDL examination. The content coverage is good but the concepts have not fully been exhausted. o Module 1 Basic Concepts of IT (6 hours) o Module 2 Using the Computer and Managing Files (4 hours) o Module 3 Word Processing (9 hours) o Module 4 Spreadsheets (7 hours) o Module 5 Database (8 hours) o Module 6 Presentation (7 hours) o Module 7 Information and Communication (4 hours)
Entry Level	A basic knowledge of the PC and computing concepts (for example an ability to use the keyboard and mouse).
Cost	Through local dealership, it is possible to buy the software in local currency. The cost is based on usage not outright sale.
Media	CD-ROM / Internet / Intranet.
Installation requirements	Pentium 2 and above. The software is Windows-based.
Pedagogical approach	This course is designed for self-learning. However, blended learning is advisable. Educators may find it cumbersome to use.
Content	• The course fully covers the requirements for the ICDL certification. • Educators may find it useful for training of trainers and as a reference tool at institutions and for short refreshers. However, constant monitoring of students progress and blended sessions will be necessary given the low level of interactivity and lack of simulations.
Interface	• Navigation tools include tools for moving forward and backward. Other tools are: o Skills assessment: Users assessment page. Allows user to take and view results of assessment o Scores: Lists users scores per unit of course within a module. Similar to score history. • The learner is not fully in control of the learning process. No pre-assessment was available and no facility for setting up a learning tracking was available. • The help function is not context sensitive.
Applicability to Context	The language used is good American English
User support	• Help: The help function provides a list of all available topics. • Local support from the supplier is readily available
Assessment and Feedback	• The user is able to view and review performance. • The assessment process itself does not use simulators, in other words there are no questions based on simulators • The learner however can view his/her score history.
Interactivity	The level of interactivity is minimal with the course depending mostly on the ability of the learner to read through the text and use forward and backward buttons. The course is not fully in the learners' control.
Overall assessment	Software is recommended but only after considering other options first. Not suitable for beginners. Only those students with a basic understanding of computers.

Overall Evaluation Ratings: Smartforce			
Category	**Average Weight**	**Total Weight**	**Available Total Weight**
Content	2.33	7	12
Interface	2.44	22	36
Applicability to context	2.167	13	15
User support	2.38	19	32
Assessment and feedback	2.57	18	28
Interactivity	2.20	11	18
Total	**2.368**	**90**	**141**
64%	**FAIR BUT CONSIDER OTHER OPTIONS FIRST**		

UNESCO ICT Training Kit and Digital Library **Evaluator/s:** Leonard Mware & Tina James	
Category	***Evaluation and Comments***
Brief Description	• This CD-ROM was produced in Uganda through the Institute of Computer Science at Makerere University, under the auspices of the UNESCO Uganda IIP National Committee. It is intended for use in in-service and pre-service teacher training within UNESCO's *Creating Learning Networks for African Teachers* initiative. • The HTML-based manual consists of seven modules, as well as an Education and Development library (not evaluated, as it lies outside the scope of this study). • The ICT training kit is aimed at enhancing the capacity of teachers to use ICTs to improve teaching and learning at the classroom level. It consists of HTML-based content on a CD-ROM. • The product is primarily developed for educators and should be used in a classroom, instructor-led environment. However it is basic enough to be used by a non-educator. • The contents can be categorised into three categories: o Computer literacy (introduction to the computer, basic Windows) o Common applications (MS Word, Excel, PowerPoint, Access, basic HTML) o Pedagogy and Internet (WWW, e-mail, listservs)
Cost	Free of charge from any UNESCO office.
Media	HTML content on CDROM. Software can also be loaded on a central server and accessed using browsers.
Installation requirements	A simple 486 machine equipped with a CD-ROM and a Web browser is required. Application is designed to be loaded on Windows. However, it can be loaded on a server and accessed by client PCs loaded with a browser. No minimum Internet speed is required since it is CD-ROM based and can run within the local intranet. Application can be easily loaded. Comes up with installation options once the CD-ROM is loaded onto PC (if autorun is enabled).
Entry Level of Competence	The course is aimed at educators with little or no previous computer experience. Basic knowledge of computing is required - assumes keyboard and mouse skills. Although the product is meant to teach this, the pedagogical approach is such that it is initially instructor led, hence some basic tutorial sessions are required.
Pedagogical approach	Application is meant to be used in an instructor-led environment. However, it can be used as a self-paced course once basic hurdles of using the computer have been overcome. It is highly non-interactive as lessons are sequential, navigation is poor (limited to basic Web links). This means that facilitator assistance would be required to practice the various applications and gain the necessary hands-on experience.
Content	• The six modules covered in the CD-ROM are: 1. How to use a computer 2. How to use specific programs to enhance learning and teaching: o Presentation Software (e.g. PowerPoint). o Spreadsheets (e.g. Excel). o Database (e.g. Access). o Word Processing (e.g. Word). 3. How to use communication tools that are offered by the Internet to enhance learning and teaching: o E-mail. o Listservs/Bulletin boards. o WWW. o HTML Editor. 4. How to develop on-line activities (collaborative projects). 5. How to use ICTs for managerial purposes. 6. How to understand what technical and managerial requirements and considerations are necessary for the introduction of ICTs in schools. • The quality of the application is poor and breadth/depth of coverage is very shallow. Lessons are discussed on a superficial level. The inclusion of content-relevant materials is useful e.g. a presentation on the human eye which was done in PowerPoint as part of the presentations module. Some of the examples tend to focus on Ugandan examples e.g. the 'telecollaboration' presentation on waste management. This is however likely to strike more of a chord in African schools than discussing pollution management in the Ohio River. • Lessons include examples that are applicable to the learners' daily work. They provide a way of arriving at the examples but do not show how to move further onto other everyday work requirements. There is a large degree of assumption that the

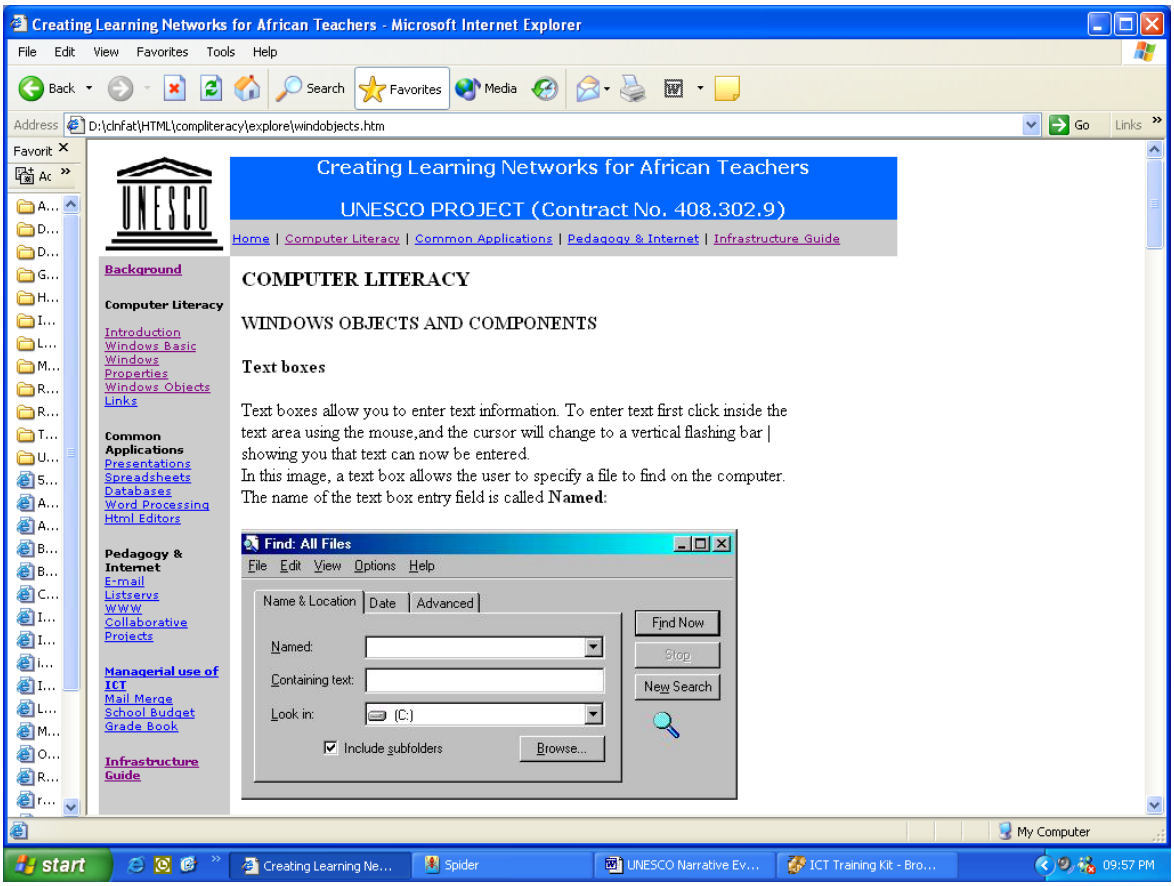
UNESCO ICT Training Kit and Digital Library **Evaluator/s:** Leonard Mware & Tina James	
	learner should be able to progress to daily use from the limited scope of lessons offered by the application.
Interface	• Navigation is straightforward and easy to use, using basic Internet hypertext links located on the left hand side of the browser page and the content on the right. • Navigation through a particular section of a module is through the use of Previous / Next buttons, which works well. • There are no icons, hence not very appealing to young learners. The menu system is simple with submenus only 2 levels deep. • The CD-ROM contains no audio or video content. It is purely text based. • The layout is poor and could be distracting. User progress is not recorded hence locating progress could be difficult. • Text is 10 point Times New Roman and highly illegible especially for the sight impaired. Some of the sections are also overloaded with textual information. • The heavy reliance on written text means that some instructions are not always clear. There are no audio / video clips • Graphics and texts do not address physically challenged persons. • Colours are highly unattractive. Graphics are blurred and sometimes illegible. • Although the navigation is simply point and click, it does not coordinate the user learning process. • Work cannot be saved. However there is the option to bookmark a Web page for later retrieval. This is not addressed or offered as an option to the learner hence it is highly unlikely that the learner will be able to do this. Printing of lessons is possible only from the browser interface and not mentioned as a part of the lesson. • There are a number of errors throughout the document (e.g. homepage photos hide the text, the lightning presentation (ironically so) keeps moving backwards and forwards, etc) • Printing out material is done through the standard Browser facility and is therefore relatively straightforward for users familiar with the software.
Applicability to Context	• Language of instruction is written English thereby raising the language entry level of competence. It is hardly a multimedia-based application. • No jargon is used. • Examples used are daily academic examples. However they are more of a technical nature and highly academic and may be applicable to the educational environment but very unsuitable for non-educators. The extensive use of examples would to some extent compensate for the unimaginative presentation throughout. • It is unbiased in gender and culture.

UNESCO ICT Training Kit and Digital Library	
Category	***Evaluation and Comments***
User support	• There is no user support available to the application. User support would have to be provided in the classroom by a facilitator. Learners working in isolation using the CD-ROM only might struggle. • There is no Help menu, search facility or glossary of terminology. • Since navigation is straightforward, little assistance is required at that level.
Assessment and Feedback	• There are no user tests available to the entire application. A couple of assignments are provided but are neither interactive nor proactive, leading the user to take them. These tests are not incorporated in the learning process and may therefore be skipped by the learner. They do not show the extent of learning that the learner may have achieved going through the course. • Tests cannot be recalled • User progress cannot be recalled. As stated above, it is possible to bookmark a page and return to it in the future since the interface is a standard Web browser, however the learner will need to be taught this. Book marking a page is not included in the entire application. • An instructor cannot assess the learning progress of a student and there is hardly any means of feedback to the learning experience. • It is not known whether separate workbooks exist that would provide additional assessment for learners. Indications are that such workbooks do exist as the package does occasionally refer to exercises that need to be completed (these could not be assessed as workbooks were not provided).
Interactivity	• The learning process is hardly under the learners' control. The learner is rather forced to go through the lesson and may not otherwise go through the course unless in a class-based environment. • The course does not in any way involve the learner and the interactivity function is reactive to the entire learning process. • There is no interactivity between the user and the application. The basic HTML nature of the application makes it highly impossible for any creative learning experience.
Overall assessment	The system is built with simplicity in mind but is rather too simple to achieve any objective. It is not interactive, pages are static and the normal back button of the browser applies. Basic knowledge of the browser is required for an individual learning experience otherwise the only option is a classroom based/instructor led environment. The application may be usable for use by entry-level educators but not much beyond that.

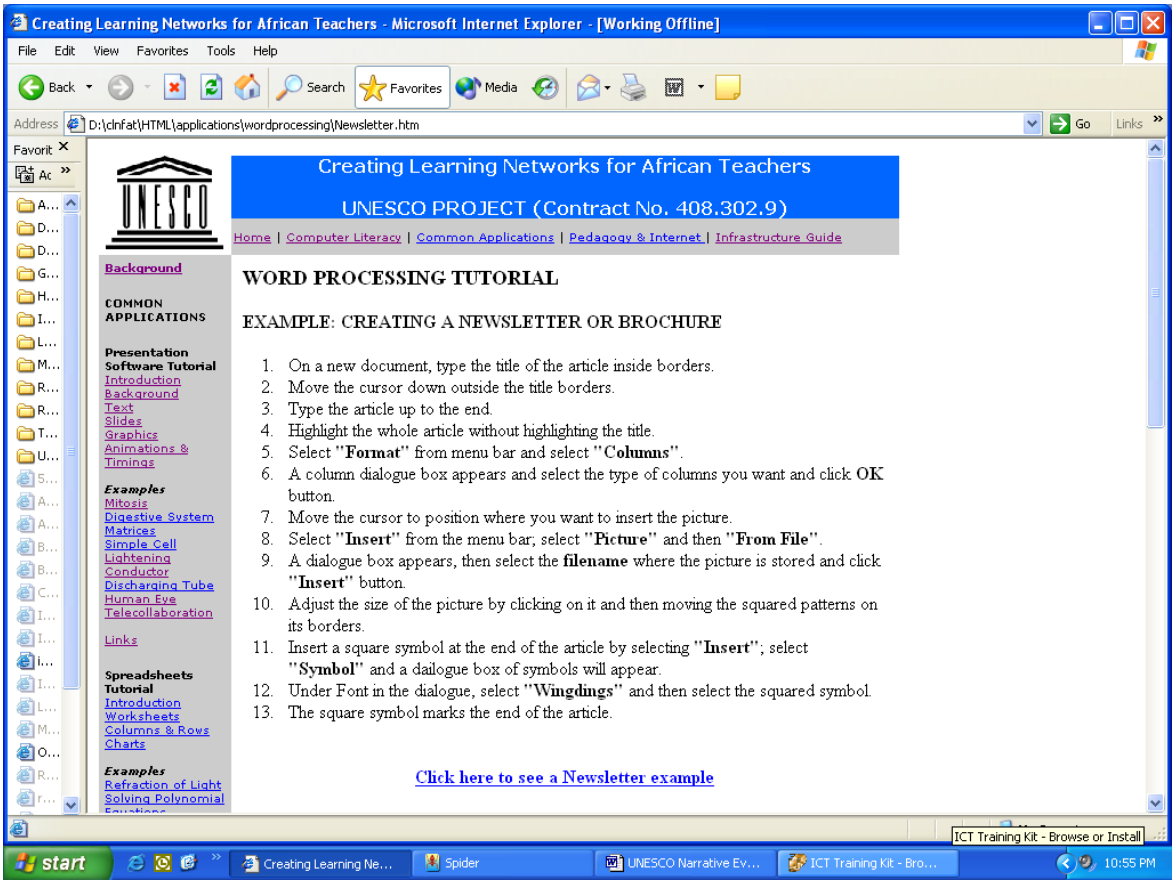
Overall Ratings: UNESCO ICT Training Kit Ben Akoh			
	Average Weight	**Total Weight**	**Available Total Weight**
Content	1.67	5	12
Interface	1.33	12	36
Applicability to context	2.00	12	16
User support	1.38	11	32
Assessment and feedback	1.00	7	28
Interactivity	1.80	9	18
Total		**56**	**142**
39% NOT SUITABLE SOFTWARE			

Overall Ratings: UNESCO ICT Training Kit Tina James			
	Average Weight	**Total Weight**	**Maximum Weight Attainable**
Content	3.67	11	12
Interface	2.56	23	36
Applicability to context	2.33	14	16
User support	1.13	9	32
Assessment and feedback	1.14	8	28
Interactivity	1.6	8	18
Total		**73**	**142**
51% NOT SUITABLE SOFTWARE			

Example of Presentation and Layout in the UNESCO ICT Training Kit



Example of Word Processing Tutorial – UNESCO ICT Training Kit

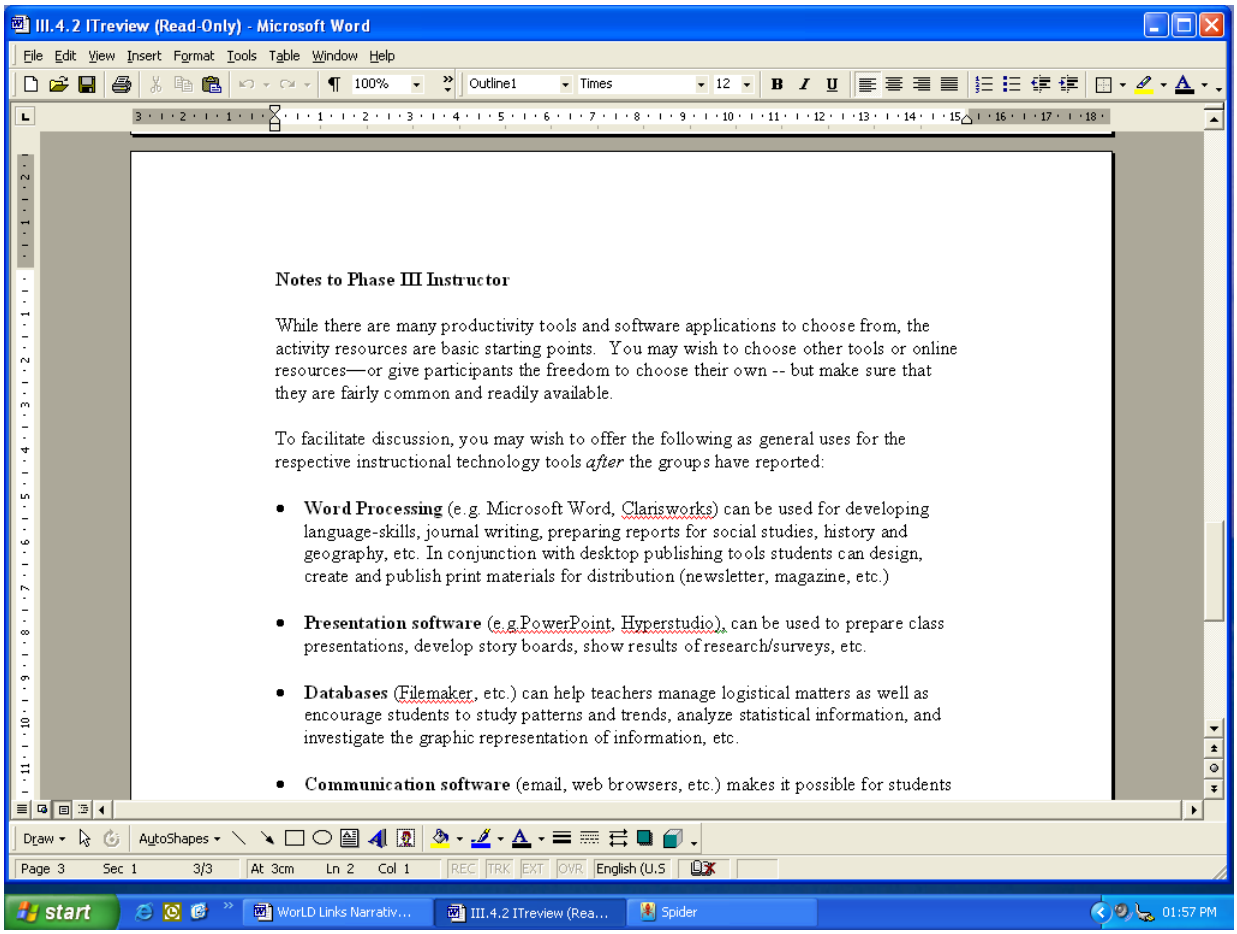


World Links Training Materials **Evaluator:** Tina James	
Category	**Evaluation and Comments**
Brief Description	This software is being used by projects in all the countries in which World Links (*www.world-links.org)* is operating in Africa, Latin America and the Middle East. The focus is on educator development. In South Africa, World Links training is being carried out in three provinces (Northwest, Eastern Cape and Kwazulu Natal) and has to date, through its cascade approach, trained about 2 500 – 3000 educators using World Links training materials. According to the World Links website, they offer five six-day training sessions, although discussions with SchoolNet SA indicate that the four modules they use are aimed to cover 40 hours of hands-on training. It is however difficult to get educators to give up a full week for training and the course has therefore been reduced to three days. Estimated retention is about 60%. Only four countries have offered the four modules – South Africa, Uganda and Brazil (in Portuguese). Most have offered only the first three modules. Although the World Links Website specifically refers to self-training materials, these could not accessed over a three-week period and it is assumed that this part of the Website is inactive.
Cost	Free of charge to all participating educators as the training is sponsored by the NGO, World Links Organization.
Media	Material is available on CD-ROM and in a printed format, although the latter is not used much. Material is available online through FTP, but is password protected. One of the modules, Phase 3, is presently being piloted in an e-learning format but is not available for evaluation.
Installation requirements	As the original WorLD Links projects worked with refurbished computers only, installations were carried out on 486s. There were however major problems with compatibility and disk space to load updated MS Office products (97 / 2000 / XP). Requires a minimum of 64 Mb RAM and a minimum of Pentium I although later models are recommended.
Entry Level of Competence	No previous experience required to enter Phase 1of the course. Phase 3 could be undertaken without the basic Phases 1 and 2. Generally it is preferable to complete the Phases in sequential order.
Pedagogical approach	Instructor-led with CD-ROM materials. The Phase 3: e-learning module will be self-driven and available on CD-ROM. It will allow offline working to cater of the difficulties African educators have with connectivity.
Content	The following four modules were included in the evaluation material. Only Phases 1 – 3 were evaluated. There was reference to a Phase 0 on computer literacy but this could not be accessed through the software made available for evaluation or through the Website: • Phase 1: Introduction to the Internet for Teaching and Learning *objectives*: Introduce fundamental concepts, technologies, and skills necessary for introducing networked technology and the Internet to teaching and learning; initiate discussion of new possibilities, generate basic email projects. 40-hour workshop. • Phase 2: Introduction to Telecollaborative Projects *objectives*: Introduction to educational telecollaboration: from activity structures, to the creation, design, implementation and dissemination of original projects. 40-hour workshop. • Phase 3: Curriculum & Technology Integration *objectives*: Develop skills and understanding of how to create, incorporate and facilitate innovative classroom practices that integrate networked technology and curricula. Create at least one collaborative publication that reflects the week's activities and encourages future. 40-hour workshop. • Phase 4: The Diffusion of ICT Innovations *objectives*: Develop skills and understanding of how to create, evaluate and diffuse innovative classroom practices that integrate networked technology and curricula while addressing social and ethical concerns. Create at least one collaborative publication or activity to promote the dissemination of instructional technology's best practices. 40-hour

World Links Training Materials **Evaluator:** Tina James	
	workshop. The World Links Website has set up a telecollaboration Centre through which educators and facilitators can communicate with and monitor training efforts in other countries and projects. It is not password protected and can be viewed by anyone.
Interface	• No audio / video; text-based only. • Consists of a standard table of contents for each phase with file headings. Files are available in PDF and Word, with some PowerPoint presentations on the learning materials. • Cannot truly be classified as more than a typewritten lesson plan approach with exercises.
Applicability to Context	• Language of instruction is English, but also available in Portuguese and French. • Customised for use on refurbished computers (486s) and therefore makes no use of anything beyond basic text. •
User support	• Since all classes are instructor-led, user support is provided by the training facilitator during the course. • SchoolNet SA, through its partnership with the Western Cape Schools Network, provides technical support in South Africa throughout its help desk. • No extensive help facility on the CD-ROM– provided by trainer.
Assessment and Feedback	• No assessment tests are carried out. • Facilitator-led exercises are conducted during training sessions. • Pre-workshop and post-workshop assessments are undertaken.
Product support	Product support would take place through the training institutions participating in the World Links project.
Interactivity	None. The materials consist of written notes for the facilitators, mapping out lesson plans and activities.
Overall assessment	• It is difficult to compare this software with others in this evaluation. As it stands and ignoring the context for which it was developed, the World Links software consists of little beyond written text and a few PowerPoint presentations. It has not used any of the creative tools available for creating content or imaginative learning materials. It therefore scores very low in terms of the quality and depth of coverage. • Within the context of use on refurbished computers, little else could have been used than text-based materials. However, the move even in African education environments is towards upgraded computers, and the need for much more imaginative software. The e-learning component for Phase 3 may lead the way towards a more acceptable solution. This software as is stands is not recommended – other better options should be considered.

Overall Ratings: World Links			
	Average Weight	**Total Weight**	**Maximum Weight Attainable**
Content	2.33	7	12
Interface	1.67	15	36
Applicability to context	2.17	13	16
User support	1.13	9	32
Assessment and feedback	1.14	8	28
Interactivity	1.20	6	18
Total		**58**	**142**
41%	**NOT SUITABLE SOFTWARE**		

Example of Presentation and Layout in the World Links Materials



8. Concluding Remarks

A computer is always a tool used for another purpose. One needs to know how it works in order to produce text, use e-mail, make calculations and so on. Knowing the basics – and being allowed enough time to learn them – is essential for all users and that applies equally to educators. Those who type fast and accurately will often get more things done. Clearly, the basics can be learned in an incidental way, and there are enough examples of computer experts who never attended formal computer classes in school or university – on the contrary, it is more likely that they avoided them! Instead they spent thousands of hours with games and other software – effective but inefficient for a learner with low levels of interest and little time and money.

This evaluation had to consider the practical realities in teacher training colleges in Africa. For a long time to come, many of the students arriving at colleges will never have used a computer. They will have no trouble figuring out what a computer, e-mail, the Internet etc. can be used for, but there will be a barrier before they are comfortable with the tool itself – and the keyboard. Overcoming this first barrier of dexterity is not difficult at all, but it needs access to the equipment and some time for practice. These students, and the educators teaching them, will be best served if they can quickly acquire the basic skills in order to go on from there and make effective use of the technology. The software covered in this study was required to address this particular need.

Categorising ICT Skills Software according to User Requirements

What became apparent during the study is that there is a lot less suitable software than originally expected and that much of it is not suitable for the context and purposes required here. What also became apparent is that software can be further categorised according to what the user would want to gain from it, and the expected levels of use for that software. This led the project team to further categorizing the evaluated software packages into likely levels of usage. This in no way reflects on the quality of the software (as measured by using the detailed evaluation framework), but rather acknowledges that not all users are equal, nor are they likely to show the same levels of enthusiasm and commitment for learning basic ICT skills.

We have therefore categorised levels of usage as follows:

Low end-user: Likely to be a person who needs the most basic of skills for typing, assignments, letters, etc. and is not particularly interested in acquiring any type of accreditation, or likely to actively develop their ICT skills. They may remain at this level or, through increased ICT use, decide to develop their skills at a later stage. E-mail usage may be irregular and/or limited by access problems. It is unlikely that classroom materials are created.

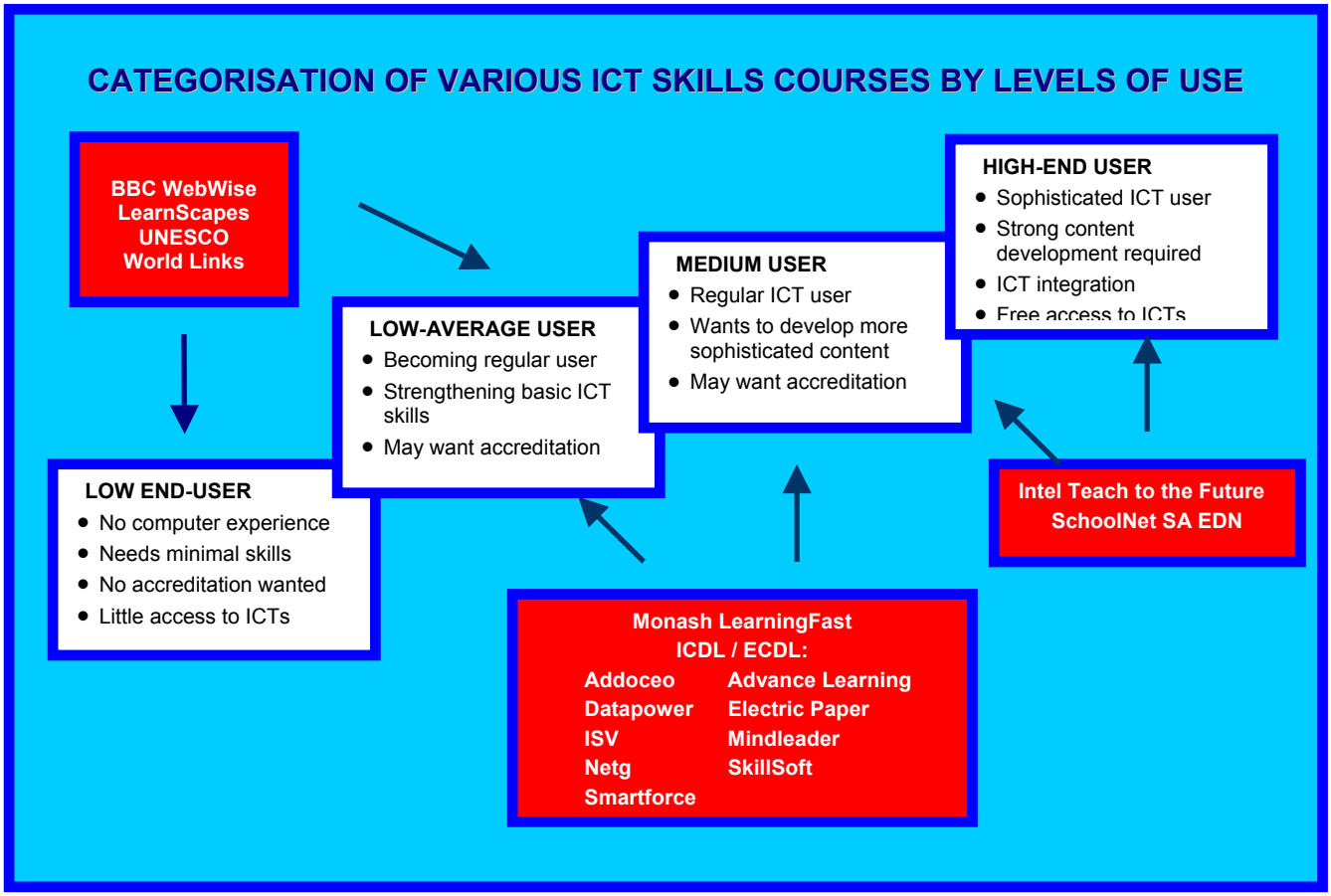
Low-Average User: This is likely to be a person with some previous ICT experience, who has strengthened the skills acquired in basic training, and who now feels the need for some form of accreditation to formalise their skills. It is likely that this person is using simple self-created typed teaching materials, report cards, and simple spreadsheets for the recording of marks. They are also likely to have fairly good access to ICTs and are well on the way to becoming e-mail users. They are not likely to be strong producers of their own content yet.

Medium User: The medium user has good access to ICTs, and is enthusiastic about developing their skills further. Evidence of their skills is likely to be seen in the use of simple, self-created presentation materials in the classroom, regular e-mail usage and Web access for additional teaching resources.

High-end user: This level of user is a sophisticated ICT user, with high levels of e-mail and Web use, a strong developer of content and may already have created Website material for themselves, their schools or colleges. They would be particularly interested in more complex content production tools. Typing,

and the use of basic office packages is strong and there is a strong drive for self-development in ICTs, and probably a desire for further study in ICTs.

Keeping the above classifications in mind, we have grouped the evaluated software into the following clusters



ICDL

The ICDL is by far the most prominent software available for ICT skills training – this may be the result of good marketing of the product and a strong Web presence originating from many countries, and particularly Ireland. The market has responded to the need for this type of training, particularly its international accreditation and comprehensiveness in teaching ICT literacy. It would be an option for the more serious educator who wishes to obtain such accreditation. It may however require more commitment (and time) than many educators would be willing to invest or have available. There is an advantage in that the ICDL is available in Portuguese, French and English.

Creativity in ICT Skills Software

There is considerable variety in the quality of the content of packages, as well as depth and coverage. Some are very imaginative with high levels of interactivity, many graphics, and ongoing assessments. Others seem to have adopted a text only approach, which is not very appealing or stimulating for the learner and does not exploit at all the possibilities offered by ICTs in training. The learner would more than likely have to be highly motivated to use this material and the course material itself would not inspire educators to develop more challenging materials for themselves.

Most of the relevant software packages catering specifically for educators were developed through donor projects e.g. UNESCO, World Links, or private sector foundations e.g. Intel, Telkom. Very few of the packages were developed by the private sector, except possibly LearnScapes and of course the myriad of ICDL based training packages.

The more inspiring use of technology appears to be driven by the private sector, and then generally for 'pure' ICT literacy courses for the general public. The software developed from an educational perspective (and which should be the first port of call for educators), on the whole seems less inspired, and a few totally uninspiring. This may be a function of budget, but one wonders if there should not be more emphasis on developing stimulating materials that can demonstrate to educators and their learners how the integration of technology can create a far more interesting learning environment if ICTs are used. If the software itself does not use these technologies, it says little for why educators would or should use them.

In conclusion, the project team acknowledges that there may be quite a number of suitable materials that were missed during the duration of this study. We recommend that Imfundo considers undertaking an update of this study in the near future to allow additions to be made. Since the evaluation framework has been developed, it should not be a major task to add any relevant materials that emerge once this study is made available on the Web. Alternatively, Imfundo may put out a request asking individuals to alert them to any software that could also be included.