Why I don't want to take a course about a pencil: Three traps to avoid when introducing new technologies to educators

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We could have just as easily called this "Why I Don't Want a Computer Drivers License," but honestly thought the current title was more clever. The general point of this article is to question some of the more common approaches undertaken when introducing education professionals to information and communication technologies (ICTs).[1] More specifically, we hope this article provides food for thought for the Ministry of Basic Education, Sport and, Culture (MBESC) professionals considering how the Ministry should continue its process of introducing new technologies into the Namibian education system. The ideas behind this article come from hours of discussions on these topics with a variety of educators and ICT enthusiasts from within Namibia and from around the world. It also draws from our joint experiences with two recent ICT and education projects here in Namibia, the Ministry's Computer Assisted Teacher Training Project (CATT/LearnLink) and the more recent WorldTeach-NIED ICT Integration Project. More than anything else, this paper addresses things we have both seen that we *don't* like. Our purpose for this is to highlight pitfalls too frequently encountered during first attempts to develop approaches for adopting new innovations into education systems.[2] We would like to introduce these to you under the titles *the literacy trap*, *the expert trap,* and *the certification trap*. In general, our main point is that, just as you don't need to know the technical names for all the parts of a pencil, a pencil's chemical composition, its history, and the peculiarity of different types of pencils to start using pencils in your work, you don't need an expert to train you about the fine points of computing to start using a computer as a tool.

1. Background

In early 2003, the Ministry will inaugurate at least four new education and technology projects. These include the Initiative for Namibian Education Technology (iNET); a project led by the American Federation of Teachers (AFT) that will research the potential for developing content to be deployed via ICTs; a pilot project based from NIED to work with teacher educators at the colleges of education to assist them in integrating the use of ICTs as tools into their teacher training courses; and a joint NIED, USAID, and SchoolNet/Namibia project to assist SchoolNet to deploy off-grid computer laboratories to an additional 100 schools in rural Namibia. Over the next two years, the combined effect of these initiatives will include connecting all the regional education offices and all the colleges of education to the Internet, equipping approximately a dozen schools with satellite television and video equipment, and developing significantly more technical capacity at NIED and SchoolNet to produce and deliver content via ICTs. Along with these projects, there are discussions about pilot testing new "technology-enhanced" curricula and work is in progress towards developing a new course for introducing media into the curriculum at the colleges of education. It is against this background that we wish to discuss our points regarding introducing ICTs into education here in Namibia.

2. The Literacy Trap (a.k.a. why I don't want to take a course about a pencil)

[1] Even though we are focusing upon education professionals, we believe that many of the points we make here are applicable to ICT training for a broad spectrum of target audiences both within and beyond Namibia.

[2] Throughout this paper, we use the terms technology, ICTs, and computers fairly interchangeably. In general, when we speak of computers we refer to a stand-alone personal computer preferably connected to the Internet. Although computers do not encompass all teaching technologies or ICTs, they are the education technologies with which we have the most experience. As such, they tend to be the technologies we reference most in this article. Teaching technologies, though, can include erasers, paper, pencils, white and blackboards, posters, overhead projectors, televisions, and VCRs among many others.

Over the past few months, both of us have had conversations with different people who suggest educators need to be computer literate before we can expect them to creatively integrate technology into their classroom activities. We have come to call this *the literacy trap* and we admit that it is one of the easiest ways in which to fall prey. Despite frequently preaching against it, both of us have found ourselves in this trap. The trap is set this way: as an educator, you are asked to develop a curriculum, training session, or lesson plan to introduce learners or professionals to a piece of technology that the group has never used before. The trap is sprung this way: your first thought is to say, "Well, in order to use the new technology, they (the new users) first need to know more about the technology." From this point, you have the objective in your mind that you need to teach the new users *about the technology.* This too often leads to teaching technology for the sake of teaching technology. Although this is not always the case, courses that take this approach frequently emphasise in their names the technology (e.g. Microsoft Excel, Computer, Radio, Word Processing, Video, etc.) along with words such as literacy, introduction, basic, or a host of other names that denote levels of competency (intermediate, novice, advanced, etc.)

"So," you might ask, "what's wrong with a course entitled Basic Computer Literacy?" Perhaps the main problem is that it follows what some have called a *just-in-case* training approach. In essence *just-in-case* training gives trainees a great amount of information and little idea of when, where, why, and how they might use this information. One example of *just-in-case* information taught during computer literacy training is types or classes of technologies. Using the pencil as a metaphor for any new teaching technology, an *Introduction to Basic Penciling* course could begin by going into depth on the different types of pencils. There are, for example, mechanical pencils, coloured pencils, soft lead pencils, hard lead pencils, and pencils with and without erasers among many other more exotic types of pencils. Another example is teaching vocabulary to describe the intricate parts of the new technology. In our hypothetical pencil course we could teach new users about pencil tips, pencil lead (normally graphite, of course), the pencil barrel, the eraser, the lead advancing apparatus (in the case of mechanical pencils), the pencil core, the pencil seam (for traditional wooden pencils), the eraser attachment sleeve (you know…the little metal piece that holds the eraser to the pencil), etc.[3] Now, if we are doing a decent job of making our point,[4] you should be able to notice that 1) this information is exceedingly boring and 2) it has given you very little idea of why or how you would want to use a pencil.

Allow us to push the pencil metaphor a bit further. How many of you can remember an experience giving children crayons to use for drawing? Was your first inclination to give them a twenty-minute detailed explanation (or even a three-week or term-long course) on the physical structure of a crayon? Our guess is that, if you did anything at all, you briefly demonstrated drawing and perhaps even told them a few words about what you didn't want them to do (e.g. don't draw on the walls, the floor, etc.) Of course, the first drawings children produce aren't masterpieces, but they undoubtedly get better with more time and practice. Imagine now what would happen if you had started by giving a lecture. We personally can't imagine even the most precocious child lasting much longer than a minute listening. Now, you might be thinking, "We aren't talking about children and we aren't talking about pencils or crayons." You're right! Unlike infants, older children, adolescents, and adults have been conditioned to listen longer, but this speaks nothing about the efficacy of training designs. In our opinion, infants are simply honest enough to walk away or cry when bored. We are sure that all of us have experienced trainings where walking away and crying would have been a very sane option.

The second point we would like to make about the literacy approach is that it too frequently leaves people wondering how or even why they would use the technologies they are being trained about. Returning to the pencil metaphor, the ultimate goal of teaching about penciling should be using pencils for some greater or more creative purpose than simply discussing what a pencil is, the history of writing devices, how pencils are made, and how to use pencils to make lines. As you can see from this, there is a lot of material here that *could be* taught about the finer points of penciling. The point of education, though, shouldn't be teaching information just because it is there to teach. The point of education should be teaching relevant skills and information, and even more important, how to

[3] The authors would like to admit here that several of these names are made up. We have as little interest in doing research on the parts of a pencil as we would on researching the esoteric names for internal parts of a computer.

[4] Please excuse this and future (mostly) unintentional pencil puns;-)

process and apply this knowledge. Again, our *Introduction to Penciling* class fails here as well. We can easily imagine our new penciling learners eventually asking, "But…what is this pencil useful for?" Just as with computers, pencils are useful for communicating, presenting information, and demonstrating creativity. And guess what? Most of us learn how to use pencils by using them for these purposes. Further, if they weren't useful for these purposes, most of us wouldn't learn, nor would we want to learn how to use them. The same can and should be said for computers and related education technologies. Most of us learn how to use computers by using computers, and we continue to use computers because we find them to be useful tools. Therefore, just as we shouldn't want to waste children's good colouring, writing, and drawing time by burdening them with lectures on the history of writing implements, why should we waste teachers' and learners' time with basic computer literacy courses?

One last point we would like to address before moving onto our next trap is the analogy between the pedagogies of standard literacy and the pedagogies of computer literacy. In both cases we think most people would agree that the ability to read and the ability to use a computer are both desirable objectives. Controversies, though, arise from different perspectives on how to teach reading and computer use. Along these lines, we find our arguments for focusing on the use of technology very similar to arguments made by whole language proponents.

Much of what currently passes for computer literacy training is not entirely dissimilar from phonics approaches to teaching reading skills. Even though children schooled wholly within a phonics tradition can demonstrate a great deal of knowledge about the structure and competencies related to reading - this does not guarantee that they can read. Similarly, even though education professionals who have recently completed basic computer literacy training can frequently demonstrate a great deal of knowledge about computers - this does not mean that they can integrate technologies into their teaching in ways that makes learning more engaging, meaningful, and relevant for their learners.[5] Phonics learners can end up wondering why they spent so much time learning all of these sounds and letters just as computer literacy learners frequently find themselves wondering why they learned all of this information about computers. The problem with both strict phonics and basic computer literacy training is that they fail to focus on the issues of why you need to learn the information or on how to use the information. From our perspective, just as phonics can be used as a *just-in-time* tool to aid a struggling new reader, a great deal of what passes as basic computer literacy training materials can be used as *just-in-time* training tools to aid new computer users when they are struggling with completing relevant and interesting tasks on a computer.[6]

3. The Expert Trap (a.k.a. why I don't want to learn about computers from an IT expert)

The second trap frequently encountered by decision makers in planning to introduce new technologies into education systems is what we refer to as *the expert trap.* The expert trap is set this way: as a training decision maker you are asked to ensure that a certain number of teachers or learners must reach a certain standard of computer literacy in a certain amount of time. The trap is sprung this way: as you feel unqualified to teach a basic computer literacy course, you decide that you need experts to help you design and possibly even deliver these courses. Of course, from the way we have framed the discussion of this trap, we feel that the first trap often leads to the second trap. Not many people feel expert enough to teach a computer literacy or computer science course. On the other hand, there are plenty of people who effectively use technology on a daily basis. Are they experts…*no!* Do they know how an average person uses technology…*yes!* Even more important, though, can they assist others in learning how to use technologies to be creative, to communicate, to write, or to conduct research? From our perspective the answer is yes…*if they are already good educators.*

[5] Indeed, it is one of our basic premises that this approach can actually have the opposite effect as these classes too frequently model extremely teacher-centred training methodologies that education professionals will, in turn, use with their learners in classes.

[6] For ideas on how simple training materials can be effectively used in a *just-in-time* manner to assist education professionals in becoming comfortable and familiar with technology, see Todd Malone, "Using Learner-Centred Methodologies to Teach Learner-Centred Methodologies: Duh: An IECT Training Process," *Reform Forum,* National Institute for Educational Development, Okahandja, Namibia, April 2002. Also see CATT/LearnLink's *One Page Introductory Sheets* online at www.edsnet.na/Edutech/TrainingDocs.htm.

Okay…that last point obviously needs more explanation. So, here it is. Good educators know how to use tools to enhance education. In one of the more influential books both of us have read, Larry Cuban gives a great example of how one teacher used an overhead projector as a spotlight for her learners' dramatic literature presentations.[7] Would she have ever been taught by an education and technology "expert" to use an overhead projector in this way? Although the answer is undoubtedly no, this isn't the important question. The question should be, *"How can we get teachers to think up creative ways to use technology to enhance teaching and learning?"* We will address this question more in a moment, but let us give you a hint at one thing we think will prevent you from getting there…expert-based computer literacy training.

Again, we present the first two traps as being linked. In many ways, involving experts in the process of designing and delivering training isn't an absolute trap. The danger of the trap more frequently depends upon the type of expert involved. From our perspective, you are much more likely to get in trouble with an IT or IT training expert than you are with a master teacher trainer who just happens to have a knack or interest in using technology to enhance teaching. The first type of expert is likely to design for you and implement a basic pencil (oops…computer) literacy course. The second (hopefully) is more likely to design a course that models for educators relevant uses of technology and encourages educators to design for themselves teaching activities that encourage their learners to use technology as a tool in the learning process. In other words, the training would effectively demonstrate and involve professionals in the process of using technology to enhance learning rather than lecturing to the educators about technology and encouraging them to do the same with their learners. Is an IT expert needed for this…*no!*

Our point on expert training doesn't end here, though. There is one other major problem we have with expert-based training. In particular, we feel that expert-based training leads people to believe that they need experts to learn new technologies. Both of us know people who have taken courses such as *Microsoft Word 2000 for Beginners*. Although most of the people we know who have taken such courses have reported them to be dreadfully boring, a few comment that they helped them get started using computers. Okay…this isn't bad. What we do think is bad, though, is when these same people feel that they need to take *Intermediate Microsoft Word*, *Microsoft Word XL for Microsoft Word 2000 Users, Microsoft Excel for Beginners*, etc. to continue to learn about computers. While this may not be bad for people with a whole lot of extra time and extra money to burn,[8] what about the rest of us? Do we also need all of these courses to become proficient with using computers? Fortunately, the answer is…*no!* Most of the people we know who are capable computer users have taken few if any computer courses and report that *they learned practically everything they know about using computers by using computers.* As such, there is a large and growing ICT training industry here in Namibia and around the world marketing their expert-based training to people who don't need it. As thoughtful educators, we owe it to the education community to make this known. For this purpose, we will repeat here what we think: *Learners, administrators, and teachers DO NOT need professional training to start or to continue using computers.* What they need is TIME and ACCESS[9] to computers along with some relevant and interesting reasons to use them and policies that encourage them to use them creatively.

4. The Certification Trap (a.k.a why I promise to test the ICT skills of prospective employees)

The certification trap is one many of us involved in professional development in Namibia find ourselves in almost every time we develop a workshop or training exercise. The trap, unfortunately, was set for us a long time ago. As such, it is almost impossible to avoid. Fortunately, knowledge (if used) is power and our hope is that we can use our knowledge of this trap to avoid its springs. In this case, the trap is sprung by following the convention of certifying training. Yes, by this we mean *don't give out certificates for training!!!* We're not joking.

[7] Cuban, Larry, *Oversold and Underused: Computers in the Classroom*, Harvard University Press, Cambridge Massachusetts, 2001.

[8] After all, there are certainly worse habits than an addiction to IT training;-)

[9] Todd Malone, "Using Learner-Centred Methodologies to Teach Learner-Centred Methodologies: Duh: An IECT Training Process," *Reform Forum,* National Institute for Educational Development, Okahandja, Namibia, April 2002.

When Jeffrey first worked in Namibia with Peace Corps training, he worked on developing a series of workshops at the Ongwediva College of Education to help train new Peace Corps Trainees to develop themselves into primary education teacher trainers. As part of the preparation for the workshops, Jeffrey was informed that he was expected to develop, sign, and present approximately 80 certificates for the college learners attending the workshops. When he asked why this was necessary, he was told that this was how things worked in Namibia and there was no sense fighting it. Since then, we have both seen that this, indeed, is a frequent expectation on the part of many people attending workshops. We have come to refer to this as *certification fever* and we literally think of it as a professional disease. The main symptom of the disease is that it attacks people's minds in such a way that they begin to confuse the possession of certain certificates with the possession of specific knowledge and skills along with the ability to effectively and creatively apply this knowledge and these skills.

Certification fever affects people in different ways, normally depending upon a person's position within an organisation. If the person is seeking a job or a promotion within an organisation, certification fever strikes her by encouraging her to seek certification of greater quality (e.g. more advanced degrees or certificates from better known or better respected institutions) or a great quantity of certificates. Does this necessarily mean that she is seeking more or better skills and knowledge…*no!* I am sure we are not the only trainers in the world who have experienced trainees who fail to show up for or actively participate in sessions; then later are among the most vocal participants hounding us about when they will receive their certificates. Why is this? Well…because we have allowed certificates to become more important than the capabilities they are supposed to represent. How did this happen? Well…because those of us who have been in hiring positions are also affected by this disease. In this case, though, our symptoms include our reliance on certificates as a sign that a person is capable. Why? Well…largely because it is easier to do this than to try and test people for competency or to call their previous employers or to laboriously analyse their CVs. In fact, many of us in these hiring positions are here at least partly based on our list of certificates, degrees, or diplomas on our CVs or the strings of letters that precede and follow our names.

Now, why do we bring this up? There are three reasons. The first is that we believe that training should start with a good set of objectives, and, if we don't watch out, our objectives will become irrelevant or at least secondary to our trainees' objective of receiving certificates. Secondly, we want to de-emphasise the need for expert training and certification. Thirdly, we hope that by de-emphasising certification, we might help prevent a large number of our stakeholders, whether administrators, staff, teachers, or learners, from falling prey to poor basic computer literacy training programs promising the ever-desired *certification of basic computer competency* or the oh-so-cutesy *pencil (oops…computer) drivers license*.

Unfortunately, Jeffrey learned the lesson of the *certification trap* first hand. During his work with CATT/LearnLink, one of the project's early tasks was hiring and training computer centre staff to run the four computer centres the project was developing at Ministry resource centres in Katima Mulilo, Okahandja, Ongwediva, and in Rundu. Following the project's philosophy that these positions could be filled by young people with some demonstrated capacity and interest in working on computers, Jeffrey and his Ministry counterpart asked the regional education offices to help the project locate a small group of young Namibians to fill these posts. The regions agreed. Soon the project had hired a group of four bright young Namibians and we were happy to see that all of them had received fairly high marks from basic computer literacy courses offered by a variety of IT training groups in Namibia. In the project's first workshop with the newly-hired staff, though, the project's senior staff members were stunned to find that only one of the four new staff members could demonstrate even a basic level of competency in using a computer…*and this staff member was the one with the LEAST amount of formal training.* What was the difference? Well…the staff member who was able to demonstrate the highest level of proficiency was the one who used the computer on a daily basis. The other three didn't. Further, they hadn't used computers before their certification training and had scarcely used them since. In most cases, they hadn't touched a computer for a few months. Fortunately, all of them can now quite easily demonstrate the competencies that their respective IT training groups had

certified them to be able to demonstrate. What has been the difference…*time in front of their computers in the computer centres.*[10]

What should this tell us about the value of some of the basic computer literacy certificates floating around Namibia? From our perspective it tells us that these certificates, particularly when obtained in isolation from any meaningful experiences with using the technology on a daily basis, are about as valuable as the paper upon which they are printed.

One final point we want to make about certification is that we question the finality that is suggested by issuing a certificate in education and technology. In our opinion, learning new technologies and learning how to use them in our work are lifetime endeavours. What, then, is the value of certifying a person on a specific technology? We would place much more significance in an educator's portfolio demonstrating his experiences in using technology with learners than we would ever place in another educators' CV including multiple certificates of competency in using any particular technology.

5. Where Does this Leave Us?

Thus far, this article has focused primarily upon what *not to do* when introducing new technologies into an education system. For the purpose of clarity, let us provide a basic list of some of these items.

10 Things to Avoid when Introducing New Technology into Education Systems (a.k.a. if you find yourself contemplating the following…run):

1) Courses that focus on technology rather than focusing on how to creatively and effectively use technology.
2) Courses that focus on creating a common vocabulary for a specific technology.
3) Ready-made training designs featuring extensive step-by-step, modularised training manuals.
4) Courses that spend hours or days introducing a technology before ever allowing learners to use the technology.
5) Courses that focus on describing the differences between different variations of a technology (e.g. Apple versus Intel computers, Linux versus Microsoft software, different types of chalk-boards, etc.)
6) Courses designed by technology professionals rather than by education professionals.
7) Hiring people for education and technology positions based upon their technological credentials rather than on their demonstrated ability to creatively and effectively use technology in an education setting.
8) Certifying people for anything short of the ability to demonstrate creative, effective, and relevant uses of technologies.
9) Confusing the concept of being technologically literate with the capacity to use technology.
10) FINALLY…creating stand-alone technology courses when the idea behind technology is to *integrate* their use into our daily lives and teaching practices.

[10] Perien Boer and Jeffrey Goveia, "A Different Approach to Providing Basic ICT Support at Multipurpose Resource Centers: The Educational Technology Trainee Experience in Namibia", *Reform Forum*, National Institute for Educational Development, Okahandja, Namibia, April 2002. Or see the report online at www.edsnet.na/Edutech/LL%20Paper5.pdf

What, then, do we recommend *to do* when introducing technology into an education system. Item 10 in the list above asks us to question why we would want to create stand-alone technology courses when our hope is to help our stakeholders see how technologies can be integrated into our daily lives and teaching practices. In our opinion, the worst way you can possibly do this is by teaching about technologies, as this too easily removes the technologies from the context of their daily uses. Instead of this approach, we recommend considering approaches whose primary focus is almost immediately getting education professionals to use technologies in their daily work and teaching assignments. This is what it means to integrate technology into an education system.

Integration, from our perspective, does not mean teaching technologies. It means using technologies. Further, it does not mean that we should just use technologies because they are there to be used. It means using technologies where it makes sense to use them. With these thoughts in mind, we might avoid the largest trap of them all…*wasting time and resources on technology because we feel compelled by hype to spend time and money on technology.* Technologies can be very useful when thoughtfully introduced into an education system, but we feel it makes more sense to encourage education professionals to slowly and thoughtfully adopt these technologies into their daily activities rather than forcing them to take questionably-effective and pedagogically-unsound technology literacy courses. In addition to our list of 10 things to avoid when introducing new technology into an education system, we would like to provide the following list of things to consider when introducing new technology into an education system.

8 Things to Consider when Introducing New Technology into Education Systems

1. Consider focusing educational outcomes and educational objectives on *the ability to demonstrate the effective and creative use of technology in a relevant educational context.*

2. Consider providing training only to professionals who will be able to access and use technology on a daily basis. Otherwise, they are too likely to forget their training and find it pointless and irrelevant.

3. Consider having any technology training activities almost immediately begin with using the technology on relevant, project-based learning activities.

4. Consider whether or not formal training is truly necessary. If an education professional already has daily access to technology, try simply requiring her to use it. That way, she will get the practice she needs while learning how to find the assistance and *just-in-time* advice she needs to address her training needs.

5. Rather than spending money on wide-spread formal training, consider diverting these funds into hiring or training education and technology specialists to assist users with their *just-in-time* training needs and assist their host institutions with their basic technology support needs.*

6. Consider having professionals applying for education and technology positions provide portfolios showing their work in this area. Also consider having them demonstrate their ability to provide *just-in-time* technical or training support to professionals experiencing problems with their technology. It is significantly more important for these people to work with and effectively train others than it is for them to have the latest and greatest IT certifications.

7. Consider that technology requires two types of training. Most people use technology as a tool. For them, they require assistance in developing the skills to do this. Some people see technology as a technical career choice. This group of people, a significantly smaller portion of the population than the first group, requires a different type of support and training. For them learning *about* technology is an end in itself. Avoid confusing the very different training and support needs of these two groups.

8. FINALLY…if integration is the goal, consider developing trainings that model and encourage integration. Stand-alone technology courses are seldom effectively designed to achieve this goal.

** These people should be hired based on their demonstrated interests and competency in using and assisting others to use technology in an educational setting, rather than being hired based upon their technical training experience or even their acknowledged technical prowess.*

6. Conclusion

Introducing new technologies into any system is difficult, but, as educators, we are tasked with the goal of modelling for other sectors of society effective mechanisms that demonstrate appropriate ways to develop human capacity. It is in this respect that it is most important for education policymakers to remain true to their pedagogical convictions and their hopes for positive education reform. Introducing new technologies provides a particularly difficult task, though policymakers are not necessarily the first to adopt new technologies. Further, they are too frequently and too easily overwhelmed by the complexities of these technologies. What we as educators must remind ourselves is that *we* are the educational experts, that *we* know how to effectively train people, and that *we* cannot forget or sacrifice our educational beliefs and philosophies at the alter of technology.

Namibia, in particular, has dedicated the past 12 years to reforming its educational policies and practices. Oddly, technology is often acknowledged for its ability to introduce change. We must be diligent then, to guard against making changes for the worse, and simultaneously be on the lookout for opportunities to introduce positive changes and model better pedagogical practices. Some of the newer information and communication technologies are excellent tools for encouraging project-based, inquiry-based, learner-centred, and constructivist education practices. They also provide a great theme for professional development, as they give in-service and pre-service trainers new and exciting sets of skills to teach. That is why it is so important to avoid falling into the traps we mention in this article. Opportunities to introduce change and model new pedagogies are rare. If Namibia misses its chances with these new education tools by introducing them using outdated and discarded pedagogies, it may waste an opportunity to effect reform and will fail at the goal of having these new technologies effectively integrated into the Namibian education system.

If you, like us, would never want to take a course on a pencil…please don't force our education professionals to take basic education technology literacy courses.