

**WORKING PAPER NO. 1**

Namibia appears well ahead of its African counterparts in terms of its use of ICT in instruction and teacher education, its level of ICT infrastructure, and its commitment to ICT for teacher and student learning. While conclusions about successes in this area premature, Namibia's story to date offers useful lessons for other African nations.

## Using ICT for Teacher Professional Development in Namibia

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# Using ICT for Teacher Professional Development in Namibia

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## **Contents**

Building a Vision: Using ICT to Create a Knowledge Society in Namibia.....	4
Creating the Foundation for ICT in Namibia’s Schools.....	4
ICT and Learner Centered Instruction: Teacher Professional Development Initiatives .....	7
Results of ICT for TPD Efforts within Teachers Colleges.....	9
Bumps on the Road to the Knowledge Society .....	10
Recommendations for improving ICT for TPD .....	13

## **Building a Vision: Using ICT to Create a Knowledge Society in Namibia**

For Namibia the goal of ICT in education and teacher professional development is nothing short of transformative— vaulting this desert nation into a desert tiger by helping teachers and students attain the “21<sup>st</sup> century skills” of creativity and problem solving. But can Namibia use ICT to transform teaching and learning into the type of knowledge society envisioned in its national blueprint, *Namibia Vision 2030*?

The country appears well ahead of its African counterparts in terms of its use of ICT in instruction and teacher education; its level of ICT infrastructure, and its commitment to ICT for teacher and student learning. Yet Namibia also faces obstacles that could delay or detour the development of the knowledge society it desires. While there have been several ongoing ICT projects for teacher professional development since 2000, many have been small scale and short lived. Namibia launched its official *ICT in Education Policy* in June 2005. This policy plan represents an attempt to create a formal vision and framework for ICT in education and teacher professional development.

In many ways, Namibia is just embarking upon this path of using ICT for teacher professional development and conclusions about its successes are premature. Nonetheless, Namibia offers useful lessons for African nations wishing to follow a similar path.

This report examines Namibia’s ICT for TPD efforts thus far. It first describes the elements with which the foundation for ICT in education has been built in Namibia. It then looks at some of the ways in which ICT has been used for teacher professional development in the present and recent past. And it concludes with an analysis of obstacles and challenges for the successful establishment of ICT in teacher professional development in Namibia.

### **Creating the Foundation for ICT in Namibia’s Schools**

Namibia is far ahead of other African nations in terms of its ICT efforts, according to Joris Komen, director of SchoolNet Namibia. The following factors have been key to attaining this leading position and for establishing the foundation for ICT in Namibian education:

- **Leadership and vision:** Namibia has impressive leadership and a clear vision for ICT use in education. The present Prime Minister was formerly the Minister of Education and is regarded as an educational visionary. Ministry of Education and NIED staffs are knowledgeable, committed, and determined to use ICT to help Namibia’s national development strategy. SchoolNet Namibia is internationally recognized for its attempts to create ICT policy and capacity grounded in the needs of the country. And there is a feeling of excitement and determination among Namibia’s education sector for using ICT to enhance educational quality.

- **Policy:** Namibia has a well-developed ICT in Education Policy plan that has been carefully crafted in a consultative fashion by major ICT and education stakeholders. The plan outlines why and how ICT should be used and articulates the government's goals regarding ICT in education. The policy also marks the beginnings of a coherent, systemic approach to ICT use in teacher professional development. The policy was drafted in part as a reaction to many of the ad hoc educational technology approaches that existed in the past. Prior to this new policy, ICT-based teacher training projects could operate without regard for a larger structural framework; they will now need to align with the government's ICT policy.<sup>i</sup>
- **Partnerships/Infrastructure:** The government of Namibia has worked hard to forge partnerships with the private sector (including vendors such as *Microsoft*, which has provided some 4,000 refurbished computers over the past two years). The government of Namibia entered into an agreement with Namibia Telecom to allow it to buy into ICT in cross-sectoral development. This has been attempted in other nations with unfavourable results. Government has also entered into an agreement with *XNet*, an Internet Service Provider (ISP), to provide Internet services to schools for N \$300 per month.<sup>ii</sup>

Schools are well constructed, with modern facilities, desks and chairs (versus benches) to allow students to work together, and with relatively secure facilities (door with locks, window bars, etc.).

The Ministry of Basic Education, Sport and Culture (MBESC) has set up local level supports for teachers to assist them with technology use and improving overall teaching skills. Teacher Resource Centres (TRCs) are located near urban or semi-urban areas in Namibia's northern regions. The TRCs are modern, well equipped with books, supplies, resources (e.g., laminating machines and copiers) and computer labs. Teachers may use these facilities for free when doing school-related work and Internet use is low cost for teachers.

- **Absorption capacity:** Namibia is second in Africa in terms of Internet hosts per 10,000 people, first in Africa in terms of Internet availability, has 36 personal computers per 1000 people vs. 9.9 for the rest of Africa,<sup>iii</sup> and enjoys a per capita income of approximately \$1900 US. If computers drop in price or if the Windhoek Vocational College is able to produce a large amount of refurbished computers for commercial individual sale, the market is there for wide-scale computer purchases.<sup>iv</sup> More households purchasing and using computers diffuses technology skills across all sectors, including education. If more teachers have a computer at home and more children have a computer at home, there is less need to focus on computer training within education.
- **ICT and Instructional Literacy:** What is striking about discussions with Namibian education officials is their high level of ICT and instructional "literacy." Namibia has championed learner-centered instruction since 1990, exhibiting a longer and more sustained official commitment to learner-centered instruction than is the case in many developed nations. Education officials appear to have a deep and nuanced understanding of ICT, its limitations and potential, and how it can promote learner-centered approaches and new types of

knowledge. Similarly, education officials are frank and straightforward about implementation failures and appear resolved to learn from their mistakes, rather than covering them up.

- **ICT is present in the curriculum:** ICT skills training (or informatics) is covered within the Namibian curriculum as seen in the following standards:
  - Basic Information Science: Grades 4-7
  - Computer Literacy: Grades 4-7
  - Computer practice: Grades 8-10
  - Computer Studies: Grades 11-12
  - Integrated Media & Technology Education: For Pre-service Teachers in Colleges of Education.
  
- **ICT is present throughout Namibia's ministries, schools and educational institutions.** On a general educational level, knowledge about computers is high. Computers are used widely for communication, record keeping, information management and data analysis. Educators are aware of their instructional potential. Organizations such as *SchoolNet Namibia*, a driving force in Namibia's ICT policy, and vendors such as *Microsoft* have provided hundreds of Namibian schools with computer labs and training. Each of the four Primary Teachers' Colleges has an Internet-connected computer lab. Volunteer programs such as World Teach, IFESH and the Peace Corps have provided technology trainers to help build ICT skills at the school and teachers college level. The Global E-schools and Communities Initiative (GeSCI) recently placed a Country Program Facilitator in the Ministry to assist with the further development and implementation of the ICT Policy and to help with the establishment of local and international partnerships to support ICT in education initiatives.<sup>v</sup>
  
- **Computers in schools and teachers colleges** Largely through the efforts of both SchoolNet Namibia, and more recently, Microsoft's *Partnership for Learning*, 25 percent of Namibia's schools have computers, and all four of its primary teachers colleges have computer labs with Internet connectivity. SchoolNet Namibia has developed a low cost computer provision model that supplies schools with refurbished thin client computers running Linux; an Internet connection (SchoolNet is the ISP provider); ICT training and access to technical support (in the form of its *Kids on the Block* out-of-work youth program) for approximately \$2500 Namibian dollars (\$400 US) per computer.

In addition to the provision of hardware and software, the National Institute for Educational Development (NIED) has arranged for World Teach volunteers to provide skills training (and ideally computer integration assistance) at certain primary schools that possess computers.

- **Enhancing curriculum and instruction:** Since the 1990s, in an effort to upgrade teachers' qualifications, NIED, a directorate of the MBESC responsible for professional development, has upgraded the skills of many Namibian teachers—through both face-to-face and online professional development—in curriculum and learner-centered instruction, to which the MBESC and NIED are deeply committed. Namibia has revised its curriculum to reflect learner-centered instruction.

## ICT and Learner Centered Instruction: Teacher Professional Development Initiatives

With this foundation for ICT in education, Namibia has recognized the need to help primary and secondary school teachers, but mainly its instructors at its four teachers colleges, develop ICT skills and connect these to instruction. Much (though not all) of this ICT-related professional development has been carried out through NIED (in some cases through online and distance learning); SchoolNet, which provides computer training to its users; two USAID-funded and AED administered projects—*LearnLink* and its successor the *Initiative for Namibian Educational Technology (iNET)*, and perhaps most successfully—though ICT was not at all the focus of TPD efforts—the USAID-funded Basic Education Support 2 program (BES II).

How have computers been used as a tool for teacher professional development in Namibia?

**As a delivery system.** Since the 1990s, NIED has provided ongoing professional development in content, curriculum and learner-centred instruction, employing a standardized training model and cascade approach. Some of this has been delivered through online and distance learning. Upon completion of a one-week workshop in curriculum or instruction, participants were supposed to return and train colleagues.

NIED's efforts have generally been successful— the number of qualified primary school teachers has increased from 18 percent in 1996 to 45 percent in 2002.<sup>vi</sup> However, because of inadequate budgeting for the lower tiers of training and because of less effective content presentation further down the “cascade,” this model of in-service training has proved much less effective than anticipated.<sup>vii</sup> Follow-up, which was to be provided by advisory teachers, did not take place as intended because of a lack of sufficient advisory teachers and because of a lack of transportation.<sup>viii</sup> Additionally, NIED has not kept records of teachers trained. (This is still the case and presents serious challenges in terms of access, equity, follow-up support, monitoring and evaluation and accountability.) In many subjects little or no in-service training occurred, while in critical subjects such as mathematics and natural science insufficient, in-service training was provided.<sup>ix</sup>

Both the *LearnLink* and *Initiative for Namibian Educational Technology (iNET)* have employed the Harvard University Graduate School of Education's WIDE World online professional development program to provide online professional development in curriculum and instruction for all instructors at Namibia's teachers colleges. As of June 2005, 70 instructors from Namibia's 4 teachers colleges had gone through the WIDE

World program and those interviewed for this case study claimed to have enjoyed it and learned a great deal. However, of the instructors interviewed for this case study, none were implementing anything that they had learned through the WIDE program. Instructors cited lack of access to functioning computers and lack of understanding of how to integrate ICT into teaching and learning as reasons for this failure of application.

**As an information management and analysis tool:** From 1995-2005, the Basic Education Support II program helped to increase teacher, teacher educator and school leader capacity in Namibia's poorest northern regions. Inspectors observed teachers' classrooms, recording their observations in spreadsheets. Spreadsheets were automated so that numeric data could be displayed in a visual format for teachers to help them assess their instructional practice. In some instances inspectors videotaped teachers' lessons and teachers and inspectors together analyzed teachers' instructional practice.

BES II data show the following results:

- 65 %of the teachers participating in project interventions showed improved performance in the use of learner-centered teaching strategies
- 53% of the teachers demonstrated more effective use of continuous assessment techniques
- 83% of the participating schools are implementing activities from their collaboratively developed School Development Plans
- 100% of the Circuit Support Teams in the target regions demonstrate improved capacity to support teachers, principals and parents in school improvement
- 82% of the participating schools regularly hold site based teacher workgroup sessions to improve instructional practice.<sup>x</sup>

**As a focus of study:** SchoolNet Namibia has supplied a great deal of the computer training to the 300 or so schools that are SchoolNet partners. It is not clear what the training covers or whether teachers actually use the skills they have developed or even for what purposes (SchoolNet, like many TPD projects in Namibia appeared to have little or no evaluation data). There is some follow-up technology training at teachers colleges through the presence of International Foundation for Education and Self-Help (IFESH) volunteers and some follow-up in primary schools through World Teach (but these are typically recent university graduates who may have no teaching experience so it is unclear how they can help teachers to integrate computers into subject areas). In the absence of evaluation data, in the absence of follow up support to schools, and given the many technical problems that beset computer labs in schools, it is fair to ask if teachers are using ICT, what they are using it for, and how they are using it. These answers are not clear.

As a tool to **improve teaching and learning**: *LearnLink* was initiated at the request of the MBESC to explore the use of ICT to enhance education. *LearnLink* and the Initiative for Namibian Educational Technology (iNET),<sup>xi</sup> worked with MBESC and NIED staff to explore ICT as a tool to enhance learner-centered instruction and to promote educational quality. This marked one of the first formal uses of ICT as a tool for learning rather than for content delivery or data analysis. Both *LearnLink* and *iNET* came into teacher resource centers (TRCs) and brought advisory and resource teachers to computer labs. *iNET* worked with Namibia's four primary teachers colleges offering opportunities for online instruction to instructors via Harvard's WIDE World course.

*LearnLink* and *iNET* attempted to prompt users to become "technology champions." Though this term was used primarily in the *LearnLink* project, the idea is to help individuals not just become users of technology but creators of information and to provoke reflection on how, why and for what purposes computers can change instruction in classrooms.

## **Results of ICT for TPD Efforts within Teachers Colleges**

In spite of these professional development efforts, these approaches have yielded mixed results, with the exception of the BES project where ICT was used as a tool to manage and analyze teacher needs. (Most of the interpretations here are based on interviews with recipients of training as there is no evaluation data, except for BES II).

Most of the professional development efforts have been directed at the four teachers colleges with the idea that instructors would both use and integrate technology with their students—prospective teachers—who upon graduation would go into a primary school and be able to help their students use computers (in effect, a cascade approach.).

For the most part, this has not happened. At teachers' colleges, the leverage point for ICT in education efforts, computer labs suffer from technical problems and extremely slow Internet connections. Most of these labs are *student* computer labs, which for the most part (one college has a teacher computer area), is booked up by students all the time—not necessarily for academic pursuits.

Instructors interviewed at two of Namibia's four teachers colleges claimed that they do not use ICT as part of their teaching infrequently require students to use computers for assignments. Instructors cited their frustration at not having access to functioning equipment (the computers in the teachers' lab have had technical problems), a lack of access to labs, no follow up, a lack of time and structure to practice and use ICT, and most critically, an inability to understand how to integrate computers to support content areas and student knowledge. It should be noted that not all of these arguments appear to be true. At the teacher's college where most of these comments originate, teachers have continual access to very active and hands on IFESH volunteer and to computers (albeit with very slow Internet access). However, without the presence of ongoing instructional support and continuous TPD, perceptions have become reality for instructors and the ICT integration that should be cascading to schools through teacher graduates has barely trickled down to the teachers' college level.

More critical and real is the issue of integration. Instructors seem genuinely unclear as to what constitutes computer integration into content areas and consequently uncertain how to even proceed on such a front. Based on review of some of the professional development, it is understandable why this is so. Though there is much talk about the need to integrate, there appears to have been little modelling of integration (most technology sessions occur in a lab that enforces the one computer: one student paradigm and that focuses on skills training). Some of the supporting materials come from Microsoft's *Partnership for Learning* program which at their core are promotional materials and which present a limited model of computer integration. In one professional development session attended by this observer, instructors viewed two videos on technology integration in South African schools. The examples centered on computer lab activities and promoted a very traditional, still teacher-centered use of both technology and instruction which appeared to equate using computers as *productivity* tools with using computers as *learning* tools.

There are other issues as well that impact results at teachers colleges. *LearnLink* and *iNET* were short term projects that expended most of their efforts on hardware provision and policy development versus actual teacher training—though *LearnLink* worked to create a cadre of “technology champions”—ICT leaders in the MBESC and NIED. The former *LearnLink* director explained that most of the 16-month life of the project was taken up with securing hardware.

Finally, NIED has not kept records of who has received TPD and has not conducted follow up professional development. This has the potential (if it has not done so already) to result in waste, duplicated efforts, lack of follow up and an inability to monitor and evaluate TPD efforts, not just at teachers colleges but in primary and secondary schools throughout the country. Further, it is not clear that the TPD that NIED staff have received around technology use and integration adequately prepares them to then provide this professional development to others.

## **Bumps on the Road to the Knowledge Society**

Namibia has achieved much of the “first wave” in ICT development—partnerships with telecoms and IT vendors have been established; hardware and connectivity provided to schools and teachers colleges; technology training provided to NIED staff, instructors at teachers colleges and many primary and secondary school teachers; national primary school curriculum revision; and an advocacy of and push toward instruction that redefines the role of teachers and students in light of the potential of ICT in education.

The “bumps” on the road alluded to here are a result of some of the implementation difficulties that arise from any new innovation, particularly as one as complex as ICT, and particularly within a context where knowledge about what makes ICT implementation successful is slowly being developed and disseminated through the education ranks and among the various ICT-in-education partners.

**Technical support:** As ICT use expands rapidly, Namibian schools face challenging technical support issues. Instructors at the primary teachers' colleges, where labs have been installed and teachers trained, are eager to use computers but are frustrated at not being able to do so because of a host of unresolved technical issues. Programs to train

technical support personnel are necessary, but in Namibia's small but rapidly expanding IT sector, these people may then quickly find better paying employment outside education. Holding on to skilled staff who can in turn maintain working computers in schools and teachers colleges will continue to be a problem, even as and especially if, the Namibian technology sector develops. There are not easy answers for this, particularly because it is a problem generated by success. In many schools across the globe, the students themselves become vital technical support. *SchoolNet Namibia* trains local youth to provide support as part of its "Kids on the Block" program; however these young people are mainly located in Windhoek, while most of Namibia's schools and students are located in the northern regions of the country and schools must cover the "Kid's" travel expense. Schools who have received computer labs through Microsoft's Partnership in Learning must pay for technical support.

*SchoolNet Namibia* has attempted to address issues of cost and technical support by providing a thin client, open source-based approach to partner schools. Since all network and computer services are centralized, all maintenance and upgrading is done at the server—versus client—location.<sup>xii</sup> Open source software, namely Linux-based software, can provide a low-cost alternative to proprietary applications, such as Windows and Office, and because it is constantly improved upon by programmers is seen as more technically reliable. While both the thin-client and open source approaches offer advantages to organizations attempting to address cost and technical support issues, some teachers and teacher trainers expressed dissatisfaction with the model, citing for example, the limited range of software available for Linux-based systems, versus those available for Microsoft; and pointing out problems with refurbished client computers that are often not addressed in the thin-client model.

**Focus on skills training at the expense of integration:** A traditional approach to ICT in education is to focus first on ICT skills training and then on integration. This model is an indirect and inefficient route to integration for numerous reasons:

- It imposes *two* layers of professional development on teachers—skills training and integration.
- It does not address what happens to teachers in the interim between skills training and TPD integration—particularly if schools are restricted to computer labs that don't work or that are booked up with ICT classes.
- It blurs the distinction between skills training and professional development that incorporates ICT so that teachers receive the former but planners, leaders and policymakers believe they have received the latter.
- The skills training approach promotes a model of computers in labs versus classrooms, further cementing the notion of ICT as a separate area of study and making integration all the more difficult.

As research has demonstrated, ICT can be used far more effectively for teaching and learning when even a smaller number of computers is placed within the teacher's classroom and is integrated into the existing curriculum.<sup>xiii</sup> Because of the structural upgrading of the 1990s, many Namibian schools have the electrical infrastructure, security and space to support the integration of computers within classrooms.

The evidence from research and practice indicates that comfort versus mastery with ICT is a more effective model for integration. When ICT is introduced in a way that is already integrated with content, ICT-embedded professional development is more effective.<sup>xiv</sup> Much of Namibia's professional development is in fact technology training, which is skills focused and has limited connection to classroom practice. Teachers do need some knowledge of ICT skills, but as interviews with faculty at two of Namibia's primary teachers' colleges reveal, knowledge of technology operations does not lead to technology use or integration.

A more effective use of resources might be to dispense with or minimize ICT training (in terms of software applications) in favour of Cisco-type "academies" where students (or teachers) learn computer repair and maintenance, networking and even software development time. This of course requires a group of skilled trainers and could take years to show results but it would begin to address the technical support issues by creating a corps of technicians who might be deployed to various regions to provide technical support to schools.

**Technology training approaches:** Some training courses have been one-time workshops that do not model learner-centred instruction. They may be modular in approach (with disparate activities and no cumulative sequence) and involve little or no follow up. While it can be argued that some technology training is better than none, both the Ministry of Education and NIED are cognizant of best practices in instruction and how people learn, and have been critical of these very types of TPD approaches.<sup>xv</sup>

According to the deputy director of NIED, Namibia is beginning its push toward integration of ICT within classroom instruction. Many schools in Namibia could easily sustain placing a pod of computers in a classroom. Infrastructure and safety are good and classes are small by African standards (50 pupils in a primary classroom is the average). Yet leaders interviewed for this case study appear to be wedded to the idea of computers in labs, an approach that limits integration by keeping computers "separate from" the core curriculum and separate from the classroom.

**Tensions between open source and proprietary platforms:** The tensions between those favouring open source solutions and those favouring proprietary solutions rages in the technology world. But it is particularly heated in Namibia and because of the major players involved (SchoolNet and Microsoft) has already had damaging effects on efforts to successfully integrate ICT in schools. Both SchoolNet and Microsoft are associated with the Namibian Educational Technology Alliance (NETA), a consortium of ICT players (though Microsoft is not officially a member) that works to provide ICT tools and training to schools. This tension has stalled a number of NETA's initiatives and has proved somewhat demoralizing to those involved in such efforts.

**Problems taking ICT projects to scale:** None of Namibia's ICT for TPD projects has successfully gone to scale. SchoolNet Namibia has tried but is experiencing the growing pains of doing so. This is not simply a question of sufficient human and financial resources. At present in Namibia, unlike countries such as Costa Rica and Chile that have brought ICT projects to national scale, there is no exemplary model for the kind of computer integration to promote learner-centered approaches that Namibian policymakers say they want.

**Lack of evaluation and follow up:** There appears to be—or it is not available—little or no evaluation data on the impact of ICT for TPD projects. Therefore, discussing the impacts of some of Namibia’s TPD efforts, both with and without ICT, is something of a black box as data do not appear to exist.

**Sustainability:** Namibia is committed to keeping ICT initiatives alive. Presently, it spends 20 percent of its recurrent education budget on education and training. This figure may rise as Namibia becomes more committed to ICT in schools and as it examines ways to provide the 70,000-80,000 additional computers needed in schools in the next few years.<sup>xvi</sup> However, the sustainability issue looms large for Namibia and for all countries demonstrating such commitment to ICT but lack the capacity to make systemic and nation wide changes. In the course of interviews for this Handbook, several of those interviewed expressed concern that Namibia’s commitment to ICT takes money away from more important areas, such as providing textbooks to schools. Others commented that, when NIED has taken over formerly donor-funded projects, there has sometimes been degradation in both the quality of programs and the quantity of teachers served.

There are small, though significant, examples of sustainability at the school level, and these indicate a grassroots commitment to ICT use among schools. Many schools have Internet access, for which they pay a monthly fee of approximately \$50 US themselves. Many other schools, in order to become computer-ready have upgraded facilities—installing electrical outlets, securing computer rooms. Teachers have paid out of pocket for their own computer training.

## **Recommendations for improving ICT for TPD**

These challenges are not new to MBESC and NIED officials. The *ICT in Education* policy, released in June 2005, and the subsequent implementation plan (scheduled for release in later in 2005) should do much to mitigate and reverse some of the challenges discussed above by establishing goals and outcomes for ICT-enabled professional development; standards of effective professional development; and aligning and coordinating ICT for TPD projects with these goals, standards and outcomes.

The challenge is disseminating, implementing, and sustaining this vision and these standards, particularly at the school level and among the various professional providers who will undoubtedly find their way to Namibia as it focuses systemically on ICT integration. Simply coordinating efforts and aligning projects with national ICT goals is not enough if there is an overemphasis on ICT provision and training and an underemphasis on the essential elements of effective professional learning and quality professional development.

What lessons can other nations draw from Namibia’s experience? And what can Namibia do in its “second” and “third” wave of using ICT for TPD?

*At the national level:*

- ***Develop a vision of what computer integration in classrooms would look like.***  
By developing a vision, goals to attain that vision and measurable outcomes of those goals, policymakers can develop standards for effective TPD and effective ICT use as part of teaching and learning.
- ***Look to international models for how to “do” good TPD using ICT:*** At present in Namibia (and in many other countries) there does not appear to be a successful model of how to use ICT to support enhanced teacher quality. There are several successful national models that nations such as Namibia might examine, adopt or adapt to its own context. Chile’s *Enlaces* program and the Omar Dengo Foundation (Costa Rica) are natural places to start because they are examples of ICT for TPD projects in developing countries that focus on strengthening curriculum, content, instruction, assessment and student learning. Nations such as Ireland, China and India provide good case study examples of formerly poor, rural, agricultural-based economies that have strengthened their education system, becoming (at least many regions) the knowledge-based societies Namibia wishes to become.

The United States, particularly schools in many of its urban schools may provide a useful example of what *not* to do in terms of using ICT for TPD. In the 1990s, many US school districts spent money on computer provision with little professional development; focused on skills training versus computer integration; expected computers to transform learning without the hard work of reforming instruction; and modelled poor uses of ICT in education (lower order software tools at the expense of higher order tools that have done little to help teachers or student develop higher order cognitive skills.) While there are certainly countless American schools that use ICT in innovative ways, computers have, to a large degree, fallen from favour as instructional tools. The discarded and broken computers visible in so many US classrooms are testimony to the failure of focusing on the technology to the exclusion of instruction and teacher support.

Since a lack of technical support and the teacher frustration with and mistrust of computers that ensues is an enormous threat to successful implementation of ICT at the teachers’ college and school level, policymakers must make a concerted effort to address school-based technology support efforts, making these a requirement of any ICT for TPD project. Presently, there is no systemic plan for technical support. Schools in Windhoek may receive help; schools in Caprivi may not. Policymakers may wish to strengthen the *Kids on the Block* concept (providing living stipends or tuition reimbursement to “Kids” who agree to spend a year in a rural area helping teachers develop tech support skills); provide TRC staff with troubleshooting skills; or invest in “Student technology squads.”

- ***Develop models of professional development that are grounded in best practices. Make these the standard to which TPD projects must conform.***

We know a lot about good professional development—it should be focused on what is going on in the classroom, long-term and sustained, use formative and summative evaluation, model learner-centered instructional practices and be supplemented by school-based follow up. Namibia is fortunate in that it has a small enough teacher population that successful models of site-based TPD can be developed, piloted, revised and disseminated. Rather than using the classic workshop or training model, a “toolkit” of professional development models (observation/assessment, lesson study, case studies, etc.) will better serve the diverse needs of Namibia’s teachers.

There are many examples of successful TPD resources, both internal and external, from which Namibia can draw in creating such TPD—TPD projects such as the Basic Education Support II project, *Applying Technology to Restructuring Learning* ([www.sedl.org](http://www.sedl.org)); NGOs with strong teacher training programs, such as Relief International/Schools Online and WorldLinks; governmental and international agencies that conduct research and development on effective uses of ICT in education, such as BECTA and UNESCO Bangkok; professional organizations, such as the National Staff Development Council ([www.nsd.org](http://www.nsd.org)) and International Society for Technology in Education ([www.iste.org](http://www.iste.org)) that have developed standards for effective professional development; and universities, such as MIT’s Media Lab, an incubator of innovative ICT use, and Monterrey Tech (Tecnológico de Monterrey) in México, which has developed its own successful model of computer-integrated, learner-centered instruction at the tertiary level.

The issue of follow up is particularly critical as it has been missing from many ICT for TPD efforts in Namibia. Schools need access to a qualified, caring human support but this may be at first difficult. As an interim measure, policymakers could address transportation costs so TRC staff can visit teachers on site at their schools. Technology tools such as mobile phones, two-way radio, Instant Messaging (IM or “chat”) and web logs (“blogs”) could also be used to facilitate follow up, coaching and mentoring between teachers and a support person.

- ***Diversify ICT provision:*** For many nations, like Namibia, ICT means “computers.” But computers, even refurbished ones, entail a good deal of expense, need for space and electricity, and severely limit a school’s options. Other computer alternatives—handhelds (The DEEP project in South Africa is a useful case study), Alpha Smarts—as well as laptops may provide the same instructional advantages as computers at a lower, less tech-support intensive cost.

Rather than placing computers in computer labs, policymakers might wish to establish some sort of low- or no-interest laptop leasing program where instructors (at teachers’ colleges) and teachers (primary and secondary schools) purchase laptops with the stipulation that these be used each day in the classroom for instructional purposes. Schools might then use any revenue to purchase LCD projectors to connect to laptops and printers which could be used jointly by all teachers. This way, instructors would begin the process of integration of ICT in their classes.<sup>xvii</sup>

Policymakers may also want to rethink Internet provision as an automatic counterpart to computer provision. Oftentimes teachers see blur the distinction between the Internet and computers and when the Internet is down, teachers believe that *computers* are not working, and by extension have no value. (For example, in one school visited in Namibia, the observer was told teachers were not using the computer lab because the “internet was down.” The computers themselves were fine.) Yet Internet connectivity is problematic in many parts of the country. If non-networked computers (with ample content in the form of interactive, encyclopaedic CD-ROMs) were provided to schools, teachers might be less likely to overly focus on the Internet as the defining feature of computers, abandoning computer use when connectivity problems arise. Alternatively policymakers may wish to look at other forms of Internet provision, such as VSAT terminals.

*At the teachers’ college level:*

- ***Use diagnostic, formative and summative evaluations for program improvement.*** If teachers colleges are the leverage points for diffusing ICT knowledge to schools, NIED or MBESC staff should meet with instructors at teachers colleges to find out what has gone wrong, why and how to remedy it. This includes examining issues such as type of TPD delivered to teachers, access to computers, and technical support.
- ***Develop Acceptable Use Policies at the teachers’ colleges complete with responsibilities of users and consequences for non-compliance:*** It is incredible to hear instructors complain that they cannot access computers because of student use when students are using computers for non-academic activities (games, porn and downloading music files were the three most common activities viewed by this observer at one student computer lab in a teacher’s college). Help colleges create and enforce computer use for academic purposes by creating strong and enforceable Acceptable Use Policies.

*At the teachers’ college level and primary/secondary school level:*

- ***Establish an integration pilot by creating “model classrooms:*** In schools where infrastructure allows, “model classrooms” with one to four computers targeted TPD to teachers in these classrooms can demonstrate to reluctant policymakers, school leaders and teachers themselves integration of computers into core subject areas can occur. By establishing such a model in a handful of “ready” schools, policymakers, planners, educators can study and evaluate the pilot, revise implementation failures based on findings and incrementally and systematically begin to apply such a model to other schools. Examples of successful computer integration in classrooms will help to combat the view that computers belong only in labs and that ICT is a separate area of study.
- ***For integration, focus on core areas of teaching:*** Teachers with strong curriculum, instruction, and assessment skills, as well as an understanding of how learning occurs, are more effective at computer integration than those with IT skills alone. NIED has recognized this and its professional development has focused on these core areas. But any professional development focusing on computer integration will

need to help teachers manage few computers and many students, and reorganize lecture-based instruction into distributed learning activities (i.e, teams of students working on different activities on the same time) to take advantage of computers in the classroom.

This type of professional development does not come from ICT companies who focus more on technology use. Rather, policymakers should look to educators and to provide professional development in computer integration. One place to start might be Namibia's private and international schools as such schools often employ innovative instructional practices, have access to high quality TPD, and have computers.

- ***Link salary increases to effective uses of ICT.*** Teaching is a desirable profession in Namibia as teachers are relatively well paid. Policymakers may wish to link teacher salary increases to evidence of effective use of ICT in instruction and/or evidence of impact of ICT on student learning.

Namibia has made impressive efforts in the area of ICT provision access and most notably in strengthening its education system within a very short time period. To a large degree, the problems outlined and the recommendations above speak to Namibia's success in getting ICT into schools and teachers colleges. The level of expertise, both individual and organizational, around student learning, effective instruction, and the transformative capacity of ICT as an educational tool is high. Developing a knowledge base around effective ICT for TPD practices; an understanding of the strengths, limitations and conditions under which ICT can contribute to teacher and student learning; and good models of effective computer integration as a learning tool; and high quality professional development that transforms this vision into classroom reality, policymakers can turn schools into partners in the creation of the knowledge society envisioned in national policy plans.

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## Endnotes

- <sup>i</sup> Interview with Dr. Patti Swarts, Former Under Secretary: Formal Education, Ministry of Basic Education, Sport and Culture. June 6, 2005.
- <sup>ii</sup> Interview with Joris Komen, Director of *SchoolNet Namibia*, June 6, 2005.
- <sup>iii</sup> 2001 data. World Bank Group. Available at:  
<http://www.worldbank.org/data/countrydata/countrydata.html>.
- <sup>iv</sup> The Government of Namibia assumed control of Microsoft's refurbishment program in June 2005. Computers will be put together at Windhoek Vocational College with a promised sales price of approximately \$385 US per computer.
- <sup>v</sup> Email communication. Dr. Patti Swarts. August 2005.
- <sup>vi</sup> Education Management Information System, Ministry of Basic Education, Sport and Culture, Table 48, p. 78. (2005). *Education Statistics 2002*. Windhoek: MBESC.
- <sup>vii</sup> International Bureau of Education (UNESCO). (2001). *The Development of Education National Report of the Republic of Namibia*, p. 10. Available at:  
<http://www.ibe.unesco.org/International/ICE/natrap/Namibia.pdf>
- <sup>viii</sup> Ibid.
- <sup>ix</sup> Ibid, p. 10.
- <sup>x</sup> LeCzel, D.K. (2004). *Namibia Basic Education Support: BES II/BES 3 Transition Conference Final Report Narrative Summary*, p. 2.  
Available at: <http://www.equip123.net/docs/e2-Namibia%20Transition%20Report.pdf>.
- <sup>xi</sup> Both *LearnLink* and *iNET* were USAID-funded and AED administered programs.
- <sup>xii</sup> Ibid.
- <sup>xiii</sup> Harrison, C., Comber, C., Fisher, T., Haw, K., Lewin, C., Lunzer, E., McFarlane, A., Mavers, D., Scrimshaw, P., Somekh, B. and Watling, R. (2002) *ImpacCT2: The Impact of Information and Communication Technologies on Pupil Learning and Attainment*. London: DfES and Becta.
- <sup>xiv</sup> Dimock, K.V., Burns, M. & Heath, M. (2001). *Applying Technology to Restructuring and Learning: How Teachers Use Computers in Technology Assisted Constructivist Learning Environments*. Austin: Southwest Educational Development Laboratory; Leach, J. (2004.) *The Potential of Hand Held Computer Technology to Serve the Needs of Teachers' Education in Africa Rural Settings*. OpenNet. Available at:  
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[http://www.col.org/pcf3/Papers/PDFs/Power\\_Tom.pdf](http://www.col.org/pcf3/Papers/PDFs/Power_Tom.pdf)
- <sup>xv</sup> See International Bureau of Education (UNESCO). (2001). *The Development of Education National Report of the Republic of Namibia*. Available at:  
<http://www.ibe.unesco.org/International/ICE/natrap/Namibia.pdf>  
and National Institute for Educational Development. (2003) *Learner-Centred Education in the Namibian Context: A Conceptual Framework*, p. 2. Windhoek: NIED.
- <sup>xvi</sup> Interview with Johan Van Wyk, Deputy Director Division of Information Technology Ministry of Basic Education, Sport and Culture, June 6, 2005.
- <sup>xvii</sup> This suggestion was made by an instructor at Caprivi Teacher's College, Namibia.