

THE IMPACT OF INTERNATIONAL COMPUTER DRIVING LICENSE TRAINING ON THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN THE CLASSROOMS BY TEACHERS IN THE ZAMBEZI REGION

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ABSTRACT

The Namibian Government, through Ministry of Basic Education, Arts and Culture chose International Computer Driving License (ICDL) literacy training as a pathway for equipping teachers with basic ICT literacy skills. The purpose of this study was to investigate the impact of ICDL literacy training on Zambezi Region teachers and their use of ICTs in their classroom practices. An explanatory sequential mixed methods design was used for this study and targeted teachers who received ICDL training between 2007 and 2011. Purposive sampling was used to select a sample of 198 teachers for the quantitative phase and eight for the qualitative phase. One hundred and twenty questionnaires were returned with ninety-six completed and twenty-four blank. An adapted Becker survey and structured interviews were used to collect data. The results revealed that fifty percent of participants did not acquire the minimum requirements of four modules to be eligible for the ICDL certification. Although ICDL training empowered participants with confidence to use PowerPoint, Word processing, Excel and internet skills, it failed to translate into teacher's ability to determine the relative advantage of

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appropriate technology to use in the classroom for effective integration practice.

KEYWORDS: *ICDL certification, ICT in Education Policy, ICT Literacy Skills, ICT Use in Classroom, ICT literacy for teachers*

INTRODUCTION

Information and Communication Technology (ICT) literacy training is a critical element in enhancing an individual's performance as through it, new knowledge, skills and attitudes are acquired enabling such a person to effectively work in a knowledge-based economy. The impact of ICT literacy in today's world has been so remarkable that it has penetrated the avenue of education transforming all its spheres to a point that no educational system can fail to bear testimony to the positive effect of ICT (Careemdeen & Nonis, 2015). A trend worldwide is to ensure that every nation's workforce becomes ICT proficient so that it can compete in international environments. The Namibian government is no exception to this trend and in response to it, developed Vision 2030 as its national development plan to "improve the quality of life of the people of Namibia to the level of their counterparts in the developed world by 2030" (NPC, 2004, p. 7). Inspired by Vision 2030, the strategic plan aims to transform the education and training sector into a more effective tool for supporting the attainment of core national development goals, e.g. poverty reduction and social inequalities (Government Republic of Namibia, Education and Training Sector Improvement Programme (ETSIP), 2007). Consistent with the objectives of Vision 2030, ETSIP and being informed by other national frameworks and blueprints, the Namibian Ministry of Education (MOE) developed an ICT policy for education in 2003, which is an update of the original policy developed in 1995 and revised in 2000 (Shafika, 2007). Among the policy objectives listed below, goal one and two are relevant to this study:

- GOAL 1: Produce ICT literate citizens.
- GOAL 2: Produce people capable of working and participating in the new information and knowledge-based economy and society
- Goal 3: Leverage ICT to assist and facilitate learning for the benefit of all learners and teachers across the curriculum
- Goal 4: Improve the efficiency of educational administration and management at every level from the classroom, school library, through the school, and on to the sector as a whole
- Goal 5: Broaden access to quality educational services for learners at all levels of the education system and
- Goal 6: Set specific criteria and targets to help classify and categorize the different development levels of using ICT in education (MoE, 2005).

In realizing its policy goals, the Ministry of Education developed TECH/NA! a comprehensive implementation strategy based on its ICT policy for education (Republic of Namibia MoE, 2006). This implementation plan detailed a comprehensive strategy for the integration of ICT across the education sector and one of its key elements, is training and usage support (Republic of Namibia MoE., 2006; Shafika, 2007). Furthermore, development levels were established for each of the above priority areas to give institutions targets for implementing ICT, ranging from level one to level five, differing on emphasis on the following areas: classroom facilities, display facilities, internet access, teacher ICT skills, computer usage, application software usage (word processor) and communication with parents via ICT (email) (GRN., 2005).

In achieving this key area of ICT literacy, the Ministry of Education entered into a special agreement with the International Computer Driving License (ICDL) (SA) through National Education Technology Service & Support (NETSS) centre to offer ICDL training in fulfilment of the intermediate and advanced level of the Namibian ICT Literacy certification for teachers (Brannigan, n.d., Cocklin, R., 2012). ICDL is an internationally accredited certificate that certifies one's ability and competency to use a computer and its most popular applications, (Microsoft Office Suite which includes: Concepts of ICT, Using the Computer and Managing Files, MS Word, MS Excel, MS PowerPoint, MS Databases, Presentation & Web Browsing and Communication) (Lubbe & Benson, 2010).

The Namibian Government chose ICDL as a vehicle for teacher ICT literacy because it was more relevant in addressing what the ICT policy for education specifies, as the ideal ICT literacy level required of teachers (GRN., 2005). It was also chosen as it is the world's leading end user computer skills certification programme and an internationally recognized qualification designed specifically for those who wish to gain a benchmark qualification in computing to develop ICT skills and enhance career prospects (Lubbe & Benson, 2010).

The training of teachers in ICDL commenced in 2007 and was offered throughout Namibia by National Education Technology Service & Support Centre (NETSS). NETSS was created as a public/private partnership between the Ministry of Education and various private and civil society partners such as SchoolNet/Namibia and Microsoft to provide the sourcing, refurbishment, installation and support of ICTs in all educational institution (Shafika, 2007). NETSS first provided ICT equipment to schools and later offered ICDL training to all teachers free of charge as a way of empowering them with ICT skills to use such equipment.

The purpose of using ICDL training as an ICT literacy tool was to enhance capability and proficiency of teachers to use a computer and

other ICT tools in classroom settings in particular and in teachers' professional work in general. In this study, the researcher investigated the impact of ICDL literacy training on the use of ICT in the classrooms by teachers in the Zambezi Region with reference to what ICT policy for education specifies in the Namibian context. The specific goals are:

- Teachers, learners and students to achieve key ICT knowledge and skills
- Pedagogical use of ICT as an integrated tool in the teaching and learning process at all levels in the educational system (GRN., 2005).

Statement of the problem

The implementation of ICT literacy training for teachers has been a key priority for Ministry of Education, but progress has been irregular across the country (Boer, 2012). A requirement for using ICTs in classroom practices is an acquisition of appropriate technical proficiencies in order to operate computers and software applications competently (Rockman, 2004). Statistics still show that the majority of the teaching force predominantly in Zambezi Education Region have not received the ICDL training as promised by the Ministry of Education due to the fact that the training was put on halt in 2011 due to government directives (Cocklin, 2012). The level at which ICT has been embedded in the curriculum and used to support teaching and learning across a wide range of subject areas varies from region to region and school to school. In a study by Boer (2012), the findings indicated that in all regions of Namibia, teachers are at a fundamental level of ICT integration which resembles the use of presentation software, a projector and a teacher in front of class. Despite various efforts from SchoolNet/Namibia and Microsoft in the 90's and 2000's, the schools remain at an early phase of ICT adoption even with the deployment of computers to schools since 2006 (2012). A few Namibian studies, such as lipinge (2010) and Boer (2012), focused on teachers' integration and use of technology in the classrooms, but none has attempted to link aspects of the ICT literacy training to use.

Through a ministerial initiative supported by ETSIP, between 2008 to 2011, 172 teachers from eight (8) senior and combined schools received training in ICDL in Zambezi Education Region (Cocklin, 2012). Despite the universal acknowledgement that ICT plays an important role in changing and reforming educational systems, empirical evidence is still absent in particular in the Namibian education system to ascertain to such impact of ICT. Up to date, no study bears proof to the impact ICDL training has had on teachers' use of ICT in their teaching and personal lives in Namibia.

Therefore, the purpose of this research was to investigate the impact of ICDL literacy training on Zambezi Region teachers and their ICT usage in classroom practices with reference to Goals 1 and 2 of the Namibian ICT Policy for Education. The study was further aimed at investigating the challenges faced by Zambezi region teachers in effectively using ICTs in their classroom environments. The study shed light on the significance of ICT literacy training on empowering teachers with technical and cognitive proficiencies as prerequisites for ICT use in their classrooms. The schools involved in this study were five senior secondary schools and three combined schools where training was offered and Zambezi region was chosen on the basis of accessibility and limited resources to cover all fourteen regions in Namibia.

The main research question of this study was: "What is the impact of ICDL literacy training on Zambezi Region teachers and their use of ICTs in their classroom practices?"

LITERATURE REVIEW

The Educational Testing Service (ETS) ICT literacy theoretical framework grounded this study. This framework was created to form a basis for defining ICT literacy and give a base for the design and conducting of comprehensive valuations and diagnostic tests (Panel, 2002).

- **Access** - knowing about and knowing how to collect and/or retrieve information.
- **Manage** - applying an existing organizational or classification scheme.
- **Integrate** - interpreting and representing information. It involves summarizing, comparing and contrasting.
- **Evaluate** - making judgments about the quality, relevance, usefulness, or efficiency of information.
- **Create** - generating information by adapting, applying, designing, inventing, or authoring information (Panel, 2002).

Due to the complexity of ICT literacy, the framework was broadened to include cognitive and technical proficiencies as the introductory set of skills and knowledge that inspires ICT literacy. Figure 1 below depicts the expanded model.

ICT literacy

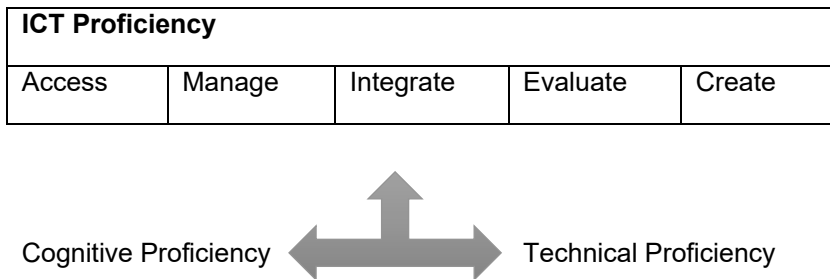


Figure 1: Expanded ICT Literacy Model: Source: Panel, 2002

This framework identifies three proficiencies defined as follows:

- **Cognitive Proficiency:** This area addresses desired foundational skills of everyday life at school, at home, and at

work. Literacy, numeracy, problem solving, and spatial/visual literacy demonstrate these proficiencies.

- **Technical Proficiency:** This area covers the basic components of digital literacy. It includes a foundational knowledge of hardware, software applications, networks, and elements of digital technology.
- **ICT Proficiency:** This area entails the integration and application of cognitive and technical skills. ICT proficiencies are perceived as enablers; that is, they allow individuals to maximize the capabilities of technology. At the highest level, ICT proficiencies result in innovation, individual transformation, and societal change (Panel, 2002).

As understood in the framework above, ICT literacy is a combination of both cognitive and technical proficiency and despite both being essential parts of ICT literacy, they stand to be separate spheres (Panel, 2002).

Defining ICT literacy

Various definitions of ICT literacy exist in literature and there is no common definition of ICT literacy in existence with organizations developing course objectives for ICT as stated by Kennewell (2002). The Namibian ICT Policy for Education defines ICT as a “concept covering all the technologies used for the handling and communication of information and their use specifically in education” (MOE, 2005, p. 4). Gordon (2007) realized that ICT symbolize core skills and transferable skills necessary to use information technology. ICT literacy is considered as having basic skills required to operate a PC, search for and retrieve information on the web, prepare a basic document, communicate by e-mail and operate a simple spreadsheet (MOE, 2005). This notion is supported by Gordon (2007) who alluded that these skills are core as they require knowledge about the basic processes essential to input, handle, and obtain information from an

information technology system. Panel (2002) defined ICT literacy as, “using digital technology, communications tools, and/or networks to access, manage, integrate, evaluate, and create information in order to function in a knowledge society” (Panel, 2002, p. 2). Kennewell (2002) proposes that ICT competency can be defined in terms of definite abilities such as the capacity to know when utilizing an ICT system is needed, the capacity to use the functions of an ICT system, and the capacity to comprehend the total range of applications available to resolve specific problems.

All definitions by Gordon, Kennewell and Panel propose that ICT literacy includes both computer literacy and information literacy (2007; 2002; 2002). According to Gannett, there should be six literacies of which web/internet literacy and media literacy to be added to the definition of ICT literacy. Rockman further stated that ICT literacy includes the capacity to use technology to gather and handle information, which is a precise use of information literacy theory (2004). From the above definitions, ICT literacy is not limited to only having basic computer skills, but also includes possessing the abilities and knowledge to: 1) identify the type of information appropriate to resolve a problem, 2) choose methods to access the information, 3) understand limits to retrieving the information and 4) to apply critical inquiry to the information (Hatmi, 2009).

Impact of ICT/ICDL on teaching and learning

Hatmi (2009) in his study on “How effective is ICDL training for Omani Teachers?”, disputed that while ICDL is effective at teaching basic skills in computer and application use, the training is not effective in training educators on critical assessment of technology or in how to determine the relative advantage of the appropriate technology to use in the classroom. Research done on the impact of ICT on teaching and learning has empirical evidence that ICT can assist teachers to teach and learners to learn more effectively (Higgins, 2003). However,

findings suggest that although ICT can enhance learning there are a number of concerns that need to be deliberated if such technology is going to make a difference. Mdlongwa (2012), states that the incorporation of ICT into the curriculum of learners is of massive advantage to them. Access to ICTs permits learners to develop skills necessary to operate in a work environment which is continuously technology dominated. Furthermore, the introduction of ICT into the school curriculum allows learners to become inventors of knowledge in their own right, by for example, using the internet search skills to locate and collect relevant data for their school projects and eventually produce a report, for example, a PowerPoint presentation. Other benefits of using ICT to learners are the development of information management skills, communication skills, independent learning, research and teamwork skills which are a prerequisite in today's international employment force (Mdlongwa, 2012).

A study conducted by Careemdeen (2015), on the impact of ICDL training on classroom computer use by secondary teachers with special reference on Badulla District, revealed that an average of 51% of the 85 participants stated that ICDL training resulted in their use of new software applications in their classrooms. The results further revealed that most of the teachers (55%) can apply what they had learnt in the presentation module, while a majority of the teachers (75%) cannot apply Database (Access) and spreadsheet applications in their teaching and learning process. Nevertheless, findings further indicated that among the teachers who underwent ICDL training, computer knowledge and skills did not affect them at all in the use of ICT in the teaching and learning process. Factors identified as adversely affecting teachers' usage of ICT in classrooms are insufficient number of computers, insufficient internet connectivity, and insufficient number of interactive whiteboards, insufficient laptops and damaged computers. Abuhmaid's study (2011), on the conduct and effectiveness of ICT training courses for teacher professional development in Jordan revealed that while such courses, ICDL included, helped teachers to

improve their ICT skills and knowledge, factors such as timing and modes of training, follow-up support, teachers' beliefs, school culture, workload and motivation negatively impacted the effectiveness of these training courses. Furthermore, Becta (2003) reports that lack of proper ICT equipment, lack of confidence, lack of technical support, lack of time and lack of effective training adversely affect the motivation of teachers to use and integrate ICT in the classroom (Becta, 2003).

Computer self-efficacy

According to the Perceptual Control Theory (PCT) perspective by Zhao and Cziko (2001), a condition that is significant for teachers to use technology in their classrooms is their perceived ability to use technology. This perspective is referred to by Teo (2009) as computer self-efficacy, teachers' beliefs and judgments of their ability to use technology in teaching processes. Bandura (1986) defines self-efficacy as one's judgement of their capabilities to organize and execute courses of action in alignment with desired goals. Results of Teo's study (2009) reported a positive significant relationship between teachers' self-efficacy beliefs and their envisioned use of technology in teaching.

METHODOLOGY

A sequential explanatory mixed methods design was employed. In the quantitative phase, survey information is collected and analysed, then in-depth qualitative data is collected through focus group interviews to convey explanation of the findings from the quantitative results.

In phase one of the study, the adapted Becker (1998) survey was administered and collected from one hundred and fifty-seven teachers who received ICDL literacy training from eight schools in Zambezi Region. In phase two, follow-up qualitative semi-structured interviews with a convenience sample of eight teachers who completed four to seven (4-7) ICDL modules.

Guest, Bruce and Johnson (2006) suggest that 6 to 12 interviews are sufficient if the aim of study is to understand shared views and

experiences amongst a similar population. Onwuegbuzie and Collins (2007) further state that a two-dimensional matrix showing sampling designs can yield statistical generalizations that are trustworthy in interpretation. The interpretive consistency may be justified if the quantitative sample is dominant or larger than the qualitative sample (Onwuegbuzie & Collins, 2007).

The population of this study comprised of 198 teachers from eight schools among whom 172 teachers received ICDL training from the Ministry of Education initiative through NETSS Centre between 2008 and 2011 in eight junior and senior secondary schools in the Zambezi Education Region. The other 26 teachers also received ICDL training through other means and 198 questionnaires were dispatched to these schools in self-addressed envelopes which resulted in a return rate of 48 percent.

Descriptive statistics such as means, frequencies, and standard deviation to the responses from the survey data were used to analyse the quantitative data. Each category of response was compared against the demographics of years of teaching experience, gender, modules completed and subjects taught. Reporting the internal consistency reliability (Cronbach Alpha) items grouped under the categories were applied in order to indicate the strength of the relationship of the survey questions.

RESULTS AND DISCUSSION

The quantitative findings from the survey indicated that the impact of ICDL on respondents' use of ICTs in their classrooms is still minimal after receiving ICDL training. Empirical evidence indicated that after ICDL training, 14.2 % of the teachers reported having used computers in their classrooms while, 52.9 % used computers outside the classroom for class preparations and other professional activities. Such findings correlate with the findings in the study by Hatmi (2009), wherein

41.1 % of respondents reported no change in their ICT competencies after ICDL training. The low rate of computer usage in classrooms may be attributed to the lack of computers and the location of available computers. The findings further indicated that on average there are fourteen computers in schools in Zambezi region where research was conducted and all computers are located in the computer labs. Teachers and learners only have access to these computers when they visit the school computer labs. Of the one hundred and eleven computers found in schools, only one computer is located in the classroom. This situation makes it difficult for teachers to make use of computers despite having set skills as learnt from the training. The findings further indicated that on average, a significant number of teachers (17.53%) reported having used computers more frequently after the training as shown in table 10 under findings. However, the majority of teachers (56.2%) are still not frequently using computers after receiving training. Findings further revealed that the lack of change in the frequency use of computers or ICTs by teachers in their classroom practices may be linked to the fact that the majority of teachers did not pass the ICDL course. Only ten teachers out of ninety-six who participated in the study passed four to seven modules.

The qualitative findings from interviewees tend to contradict quantitative findings by showing that the ICDL training had empowered them with skills to use technologies in their classrooms especially in Microsoft Excel, MS PowerPoint and Internet. This disparity is attributed to the fact that the selected participants had passed between four and seven ICDL modules during the training which indicated ICT competency. However, the teachers' responses to the impact of the training on technology use in the classroom revealed an overall view that they have been empowered with skills to use Microsoft Excel, Microsoft PowerPoint, Microsoft Word and Internet for administrative and classroom purposes. Findings from a study conducted by Careemdeen & Nonis (2015) on the impact of ICDL training on classroom computer use by secondary school teachers (special reference on Badulla district

in Sri Lanka), also pointed out that fifty-five percent of the participants stated that PowerPoint was the element of ICDL training that they would most likely be able to transfer into their classrooms because of its applicability.

Self-efficacy and improved ICT teacher skills

The respondents both in the quantitative and qualitative components of the study indicated that the training improved their confidence in as much of the ICT skills ranging from saving files in different locations to creating file shortcuts, simple presentation shows and inserting page numbers in word documents. Conversely quantitative empirical evidence revealed that there are still teachers who lack basic skills in Access, Excel and file management after ICDL training. This evidence consolidates the findings by Careemdeen (2015) where seventy-five percent of the teachers who received ICDL training still mentioned that Access was the application they would least use in their classroom practice and twenty-five stated that they would be utilizing MS Excel to record marks and prepare other learners' activities. The results further denote the low use of these software packages by participants.

The quantitative findings of the study further confirmed that 60.98% of teachers do not and seldom use computers for classroom practice. Contrary 38.9% of the respondents use computers weekly and more often. Factors contributing to insufficient use of computers/ICTs by teachers in their classroom practices are identified as: lack of internet connectivity; insufficient ICT equipment (LCD projectors and whiteboards) and improper maintenance or obsolescence of software and hardware. The lack of self-confidence was also mentioned as some respondents felt that much time was wasted on connecting the equipment in their classrooms. Teachers in the study noted that the lack of self-confidence is partially due to the unreliability of trainers during ICDL training/ The trainers would miss scheduled sessions and when present, failed to exercise patience with beginners. The shortcoming of

trainers of failing to group trainees according to their level of prior knowledge and skills, i.e. beginners, intermediate and expert levels, caused beginners to quit the training earlier as they felt neglected.

The ETS ICT literacy framework

Focusing on the two proficiencies, results shows that ICDL literacy training did not achieve much to empower participants with cognitive and technical skills to become ICT proficient but rather focused on theoretical fundamentals of ICT. Though teachers indicated that their ICT skills improved, these skillsets are limited to basics operations in PowerPoint, MS Excel, Internet, and MS Word and file management. The training did not develop foundational skills of application of the software within everyday life at school, home and work in teachers such as problem solving, numeracy and spatial literacy. Evidence further shows that only eleven teachers (23.91%) out of 46 teachers who indicated the number of ICDL modules passed qualified for certification. This may be the reason why the use of ICTs by teachers in their classroom practice is low. Technical proficiency which is the basic component of digital literacy also was not fully achieved by participants from the training.

CONCLUSION

The impact of any ICT training to be felt requires training participants beyond technical skills to enable them to function effectively in a global economy reliant on ICT. Technology skills without being accompanied by cognitive skills and overall literacy, will just widen the digital divide. More attention should be directed towards preparing citizenry for the technology age. It is imperative that any ICT training offered should include both technical and pedagogical skills needed to use and integrate ICTs in teaching and learning. This should start with teacher training institutions and continuous professional development programmes to revisit their ICT curricula and ensure that a convincing

display of both technical and pedagogical skills becomes a pre-requisite for teacher certification.

It is imperative from the study that the Ministry of Education needs to provide up-to-date working ICT equipment to schools and fully furnish the ICT facilities at schools. Furthermore, the government need to provide on-site technological support, situated training for teachers with educational technology coordinators in clusters or educational technology teachers at each school focussed on supporting the ICT integration practice of teachers per school.

Furthermore, the results from this study could question the appropriateness of ICDL as the vehicle in preparing ICT literate teachers in Zambezi. Whatever ICT Literacy program the government chooses, it is important to have competent and committed ICT literacy trainers. Future studies should focus on whether such low impact of ICDL is experienced across Namibian teachers. Studies should investigate and pilot other ICT literate tool to establish what would work best in creating a more cognitive output while at the same time teach ICT literacy skills.

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