Living with Digital Education: The Impact and Power (or Otherwise) of Information and Communication Technology (ICT) and Internet in the life of Norfolk State University Community – An Exploratory Study.

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Abstract - Information and Communication Technologies (ICT) of various kinds have been used in many sectors of life for quite a while. The education sector, in particular, has grown in leaps and bounds in the array of technology tools being used to support students' learning. ICT has transformed teaching, research, and learning at all levels empowering educators and learners and thus making amazing contributions to the development of education worldwide. The combination of ICT and the Internet has ensured that students can spend less time visiting the library and can be anywhere learning and researching with their portable ICT devices. Students anywhere in the world using Internet power can enroll in an asynchronous online class and complete their degree program in less than four years without stepping into the four-walls of a traditional classroom. This study investigated the significance of ICT usage by staff and faculty members at Norfolk State University, (NSU).

Keywords – ICT, ICT and Education, Internet Use

I. Introduction

"Information and Communication Technologies (ICT) is a term which refers to technologies that are used for collecting, storing, editing and passing on information in various forms. A personal computer, PC is an example of a commonly used type of ICT device in education. In the educational sector, ICT has transformed teaching, research and learning at all levels empowering educators and learners and thus making astonishing contribution to the development of education worldwide (Brush, Glazewski and Hew, 2008).

Inextricably linked to ICT is the Internet; another technology that is so pervasive and has remained one of the most important sources through which anyone with a network-connected computer can easily access information, remain in touch with friends, colleagues, and interact with family members irrespective of where they are located on planet Earth (InfoDev, 2005). The combination of ICT and the Internet have made possible to complete everyday tasks without leaving our homes; from shopping to reading, to watching movies, playing music, and a countless number of activities one can imagine (Castro Sánchez and Alemán, 2011). The Internet reach and coverage of pretty much anything under the Sun is so amazing that even visiting the library or making early morning rounds to newsstands are not just fast becoming old-fashioned, but also a thing of the past (Jacob & Isaac (2008). Students worldwide can enroll in online classes and complete a degree program in four years or less without stepping into the four-walls of a traditional classroom. Electronic textbooks (e-books) are increasingly being substituted for the paper-based versions. Since e-books are now readily available online, students can gain the same knowledge through electronic means with animated materials that are packaged with their e-textbooks, but at a much cheaper cost (Brush et. al., 2008).

Additionally, the list of the so-called ‘social media' outlets have been growing that are created to cater for the needs of a variety of people based on their demographics, religious beliefs, or other personal interest. Not surprising; all of these have been made possible because of Internet presence and the array of affordable ICT tools people have access to.

Studies have provided useful data on the overall picture of ICT use and Internet benefits in general. Through personal observation, our campus, NSU has not been doing badly in the area of ICT and Internet adoption and utilization for the benefit of our predominantly African-American students. The evidence is abundant to see everywhere on our campus. The multi-million-dollar facility recently added to the Computer Science department located at the McDemmond Center for Applied Research, (MCAR) building for studying cybersecurity programs is a testament to the University's commitment to investing huge resources into modernization and truly making NSU a center of excellence! The life of Faculty and staff of NSU have also revolved around the use of Internet-based technologies in one form or the other. These have all been possible with the advent of the Internet.

Study Goal

This exploratory study sought to analyze trends in ICT and Internet comfort and assess the satisfaction level
among NSU faculty and staff and to some degree, help to understand more succinctly the culture of ICT and Internet use at the University.

**Research Questions:**
- How skillful and comfortable are FS at NSU using the various ICT tools on campus?
- What are some of the positive and negative impacts of ICT/Internet Technology use among the FS groups?
- In what ways has the deployment of ICT enhanced or facilitated the educational objectives of NSU students and FS over the years?
- What future prospects lie ahead with ICT tools and deployment on campus?

**II – Literature**

**Benefits of Using ICT in Education**

In related studies, several authors have described the many benefits of ICT and Internet use in education. In the work of Jo Shan Fu of the National Institute of Education, Singapore as published in the International Journal of Education and Development using Information and Communication Technology 2013, the author outlined some of the following statements as some of the key benefits of ICT in education.

**A. “Assist users in accessing digital information efficiently and effectively**

As Brush, Glazewski and Hew (2008) have stated, ICT is used as a tool for users to discover learning topics, solve problems, and for educators to provide solutions to the problems in the learning process. ICT makes knowledge acquisition more accessible, and concepts in learning areas are understood while engaging all users in the application of ICT” (Jo Shan Fu, 2013).

**B. “Support student-centered and self-directed learning**

Users are now more frequently engaged in the meaningful use of computers (Castro Sánchez and Alemán 2011). They build new knowledge through accessing, selecting, organizing, and interpreting information and data. Based on learning through ICT, users are more capable of using information and data from various sources, and critically assessing the quality of the learning materials” (Jo Shan Fu, 2013).

**C. “Produce a creative learning environment**

ICT develop learners’ new understanding in their areas of learning (Chai, Koh and Tsai 2010). ICT provides more creative solutions to different types of learning inquiries. For example, in a reading class, e-books are commonly used in reading aloud activities. Learners can access all types of texts from beginning to advanced levels with ease through computers, laptops, personal digital assistants (PDAs), or iPads. More specifically, these e-books may come with some reading applications, which offer a reading-aloud interface, relevant vocabulary-building activities, games related to reading skills and vocabulary acquisition, and more. Therefore, ICT involves purpose designed applications that provide innovative ways to meet a variety of learning needs” (Jo Shan Fu, 2013).

**D. “Promote collaborative learning in a distance-learning environment**

Koc (2005) mentioned that using ICT enables users to communicate, share, and work collaboratively anywhere, any time. For instance, a teleconferencing classroom could invite learners around the world to gather together simultaneously for a topic discussion. They may have the opportunity to analyze problems and explore ideas as well as to develop concepts. They may further evaluate ICT learning solutions. Learners not only acquire knowledge together, but also share diverse learning experiences from one another in order to express themselves and reflect on their learning” (Jo Shan Fu, 2013).

**E. “Offer more opportunities to develop critical (higher-order) thinking skills**

Based on a constructive learning approach, ICT helps learners focus on higher-level concepts rather than less meaningful tasks (Levin and Wadmany, 2006). McMahon’s study (2009) showed that there were statistically significant correlations between studying with ICT and the acquisition of critical thinking skills. A longer exposure in the ICT environment can foster learners’ higher critical thinking skills. Thus, schools are strongly advised to integrate technology across all of the learning areas and among all learning levels. Where this is done, students are able to apply technology to the attainment of higher levels of cognition within specific learning contexts” (Jo Shan Fu, 2013).

**III - Methods**

**A. Participants and Procedures**

Data was collected through the use of an online survey service portal, Survey Monkey at surveymonkey.com via an anonymous online questionnaire that was created and developed. The sample questionnaire was developed to target mainly NSU faculty and staff (FS) including administrators.
The sample attracted 70% females and 29% males FS respondents whose ages range from 25 to 75 years. The mean age was 20.33, and 33% of them were between the 55 to 64 age bracket. 74% of the respondents have a graduate level degree and with 25% earning an income between $50,000 and $75,000 per annum depending on their employment status and classification. We also assumed all faculty and staff had access to at least, a campus or home computer with Internet access. We also assumed some possess other portable devices such as a tablet that could be used to participate in the survey questions. Any NSU faculty or staff meeting the preceding criteria was deemed qualified to participate in the survey. The survey was conducted from October 01 to October 20, 2018.

C. Instrument
Approximately 500 of NSU regular faculty and staff were targeted for this survey. A set of twenty-two (22) survey questions were developed as the research instrument for the purpose of the study focusing on 1) the ICT skills of the FS, 2) their perception and representation of the impact of ICT at NSU, 3) their perception of risks and challenges typically encountered by them using ICT and the Internet, 4) other vital data considered pertinent to the study. These questions were designed to uncover the typical ICT usage, the patterns, and to help understand the culture, competency levels, and how ICT devices have benefitted the community at large. The questions were also designed to identify some of the key weaknesses of the existing infrastructure and how future improvements can be made. Of the 22 items that composed the questionnaire, only one was an open-ended question, while the remaining were closed-ended questions made up of a single answer, multiple choice, or Likert scales types. The open-ended question became necessary to enable the participant to self-identify the department at NSU where they belong.

IV. Result Samples
The following are some of the feedback from the twenty-two questions examined through the survey data and presented as follows just to demonstrate a few of the responses received from the study:

Table 1: What is your age?

Table 2: Which of the following Information and Communication (ICT) technology devices do you use on the NSU campus or at other locations? (Check all that apply).

Table 3: How frequently do you interact with or use the following ICT devices?

Table 4: For each source of help listed below, rate how likely you are to use it when you experience computing technology problems (for example, issues with software, network, desktop computer).

Table 5: Indicate how strongly you agree or disagree with each of the following statements regarding ICT use.

Table 6: Indicate how often you use the Internet for the following purposes.
V. Discussion

**Demographics** - Respondents comprised of 53% of faculty members, administrative staff members 25%, other staff members 20%, while an additional 1.6% identifying as not FS. In addition, 70% were females while 29% self-identified as males. Respondents came from various offices at NSU with evidence of good representation from several departments including the presidency and provost's office. Participants' age range is between 25 and just above 75 but the predominant age range is between 55 and 64 years of age. The dominant race was Black or African Americans but this is expected since NSU is an HBCU classified institution. The other races including Caucasian Whites and Asians also actively participated. The median income range of the participants was between $50K - $75K per annum. As expected others make more or less depending on their job classification.

**Technology Use** - Desktop PC is the most commonly used tool on campus, Laptop computers followed closely while Tablet computers are also used very often especially by those FS who are constantly on the move. These devices appear to be in abundant supply at NSU apparently as part of growing investment in Technology on campus.

Email communication and text messaging are the most common task or routine undertaken on campus. Internet search engine – Google is the most popular search tool. ALL participants also claim to use one or more ICT devices when on or off campus.

**Utility Software** - The most popular software used by FS is WORD PROCESSING. Since Microsoft Office is usually pre-installed on NSU computers before distribution to users, we presume MS WORD is the most popular version of word processing software in use. Presentation software (presumably MS PowerPoint) is the second most popular application software in use. Timekeeping also appears to be important to FS. From the survey, a substantial number (60%) also responded that they make use of one-time keeping (scheduling software) or the other regularly to keep track of meetings and other tasks for the day, week, or months ahead.

**ICT Use and Comfortability** - FS appears to be ICT savvy in all respects. In addition, when there is a technology problem or related issue, many are comfortable trying to solve the problem on their own. If it cannot be solved, they also have good knowledge of where or how to get help, from using NSU ICT helpdesk to asking a friend or colleague, or carrying out a Google search on how to fix the problem. If every attempt to fix the problem or contacting their unit/department's IT desk. In another related question asked in the survey, FS are comfortable and keen to learn new application software especially if it is key to getting their job done in the most efficient manner, act as a guide for others when researching on a subject/topic, happy integrating technology continuously into their daily lives, and using technology to analyze issues and make informed decisions. When it comes to FS experience with interacting with their common everyday ICT devices, respondents do not feel intimidated or threatened by their devices and will readily accept to use any ICT device available. They are confident using the devices on campus, at home or elsewhere there is the need to use one. FS also mostly agree that the culture of ‘know-how’ should continue to be extended to students and that ICT tools are capable of being used to learn and develop a whole array of other educationally related works of life.

**ICT/Internet Common Usage at Home and Elsewhere** - FS also use their ICT devices at about the same frequency both on campus and home. Their devices appear to be used pretty much anywhere there is Internet access especially with folks with portable devices. This observation suggests people are constantly using their devices round the clock except perhaps when they are sleeping or engaging in other activity where the use of ICT is restricted. When prompted to address for what purpose they use their ICT tools for and how often, FS overwhelmingly acknowledged administrative, faculty...
and staff tasks is the number one purpose and followed closely by research work especially by faculty members. Other popular purpose includes social networking, buying/selling products, playing computer games, and watching movies in their break times.

**Perception of ICT/Internet Usage and Impacts on Students -**

With many negative reports in the press associated with social networking, we were curious to know what FS think about students' interaction with the various ones in cyberspace. The findings show many FS are still in favor of continued interaction and perhaps perceived as good educational tools for NSU students. Popular social media favored include YouTube, LinkedIn, Facebook, Twitter, Instagram, Snapchat and WhatsApp. From the study also, faculty appears to have the culture of using the Internet to help develop lesson plans/ideas, to prepare tests for students, manage student performance and grades, and also for personal research work. They also typically utilize smart boards, digital video cameras, projectors, and several other assistive technologies both in their classrooms and offices. FS is also very comfortable using the provided learning management software, Blackboard for managing everyday affairs and interaction with students. When asked for FS perception on the impacts of ICT tools on our student body, FS perception differs on the many subjects raised. There seems to be more agreement on the positive impacts of ICT on NSU students than the negatives. For example, FS believe ICT enables students to collaborate more with others for learning and development. They believe that inappropriate websites create safety risks for students who visit them but students are nevertheless more academically motivated when they are in possession of ICT devices. On the negative impacts, FS believe that the abundance of unreliable sources on the Internet diminishes students critical thinking skills, and that with ICT, plagiarism and other unethical behaviors among students are major problems on the campus. They are also of the opinion that too many inappropriate websites are frequently visited by students.

**Perception of ICT/Internet Future in Education -**

Considering FS perception of ICT present and future usage on NSU campus, FS agrees that Technology has provided the means for useful collaboration with others especially when building school units or departmental plans, that Technology will continue to improve the ability of faculty to teach more effectively, and that Technology has significantly impacted the way that faculty teach and/or interact with students. In addition, FS are split or unsure whether Electronic media will replace printed text materials within the next few years even though there is ample evidence of increasing use of electronic textbook materials on campus. Finally, FS believe that existing ICT on campus are reliable and helping to facilitate meeting their daily job goals, targets, and expectation.

**ICT Improvement, Challenges, and Efficiency -**

On NSU ICT practice and possible improvement, FS think more technical support could be provided to keep the campus computers and applications running well, that more options are needed for professional development in the areas of technology use, and that more access to technology tools are needed to integrate them into the classroom for teaching and instruction. Other areas needing improvement include more training in the use of technology in general before being implemented as well as having faster access to the Internet and wireless campus. Most FS are dissatisfied with accessing NSU Internet resources when off-campus. This appears to be the area of most concern. On FS perception of what typically make them work most efficiently on campus, FS voiced adequate training and prior instruction in the use and function of information technology as the number one reason that brought about efficiency. Technology support via NSU help desk, or interdepartmental help was considered to be the second most important reason that make FS efficient, while Training/instruction in the use of technology as it relates to teaching pedagogy (for example, instruction on using Blackboard) and Technology infrastructure (network, central system) are equally considered to be the third most important reason that aid their efficiency. On FS opinion on the state of NSU ICT infrastructure and other perceived impacts on our campus community, FS believe that the ICT infrastructure benefits and impact the lives of the student population in many positive ways than many of the reported negatives in the media, that the ICT infrastructure has created a much better learning environment and has enabled good connection with the students. However, a sizeable number of FS did not give an opinion or disagree on the question of whether NSU ICT infrastructure state is very strong and adequate for the learning environment, or comparably better than many other institutions across the country, or that the campus ICT infrastructures are located at the right places making them easily accessible to make a difference in the learning of the students.

**VI. Conclusion**

This exploratory study sought to determine the impact and power (or otherwise) of Information and Communication Technology (ICT) and Internet use in the life of NSU Community. It is obvious that as we progress far into this century, ICT and the Internet will continue to play a huge role in how our educational community operates and how the infrastructural systems as provided will continue to impact the typical NSU student's learning. In particular, this study discovered that the provision of ICT infrastructure at NSU has impacted the educational practices of the University in quite a number of positive ways and the relevance of ICT use will continue to grow considerably in years to come. ICT and the Internet infrastructure at the University will continue to
become a strong agent for change among the many educational uses on campus. Extrapolating current activities and practices, the continued use and development of ICT with faster Internet access at NSU will continue to have a strong impact on 1) what the students learn, 2) how they learn, 3) when and where their learning takes place, and 4) who is learning and who is teaching a subject matter. All respondents in this survey provided answers to the entire survey questionnaire. The findings focused on the following areas: ICT competence level, expertise, and training, the frequency of ICT use and access to ICT resources (remotely and on-campus), ICT use for teaching, administration, professional development, and personal use; and the influence of ICT on students' learning. The results from this study have helped to understand the perceptions of NSU FS on their interaction and practices with ICT devices installed on campus or used elsewhere. We were able to determine that FS have no resistance to using ICT devices in any way or form and that the community seems fairly comfortable with the campus technology infrastructure as currently deployed. Going forward, ICT on the NSU campus is here to stay, and people will continue to yearn for newer and latest technologies to be deployed. Because access to digital tools, applications, and networks will continue to grow nationwide; and various educational media increasingly available in digital forms, ICT use in education can be expected to grow exponentially not just at NSU, but other comparable institutions across America.

VII. References