

Stress and Frustration Effects on Use of ICT for Research by Undergraduates in Ogun State, Nigeria

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Abstract

Purpose: This study was carried out to reveal the effects of stress and frustration on use of information and communication technology for research by undergraduates of selected universities in Ogun State. The study focused on stress and frustration effects on research when the student uses ICT for research.

Design: Three universities were selected for the study. Descriptive survey research design was adopted for this study and structured questionnaire was used to collect data from two hundred and fifty (250) undergraduates using random sampling technique.

Findings: The study found out that distance between students' residential areas and ICT centers is responsible for stress and frustration among the undergraduate students which results in lack of interest by the user to continue using ICT. The study concluded that Stress and frustration has significant effect on students in the use ICT for research and recommended that there is need to create conducive environment for students and guide the students in the proper ways of getting the best from the ICT infrastructures.

Introduction

The term 'ergonomics' is derived from two Greek words: 'ergon', meaning work and 'nomoi', meaning natural laws. Ergonomics is the study of how working conditions, machines and equipment can be arranged in order that people can work with them more efficiently [1]. As computers are probably the most ubiquitous type of machine in today's work and learning environments, the issue of ergonomically sound interaction with them has come to the fore. In general, computers are clean, quiet and safe to use. However, poor interaction with and positioning of computer equipment can lead to health problems such as eyestrain, swollen wrists and backache and ultimately lack of interest in making use of ICT infrastructures for research by undergraduate students.

Mustafa et al. citing chapanis [2] opined that ergonomics deals with the application of information about human behaviour, capabilities and limitations to the design of systems, machines, tools, tasks or jobs and environments for productive, safe and effective human use. The goal of ergonomics is to ensure a good fit between the students and their learning environment, thereby maximizing students comfort, safety and health, productivity and efficiency. Health and Safety Executive (2013) [3] defines ergonomics as a science concerned with the 'fit' between people and their work. It puts people first, taking account of their capabilities and limitations. Ergonomics aims to make sure that tasks, equipment, information and the environment fit each worker. It also identified the demands on the worker (activities, workload, work pacing, shift-work and fatigue), the equipment used (its design in terms of size, shape, controls, displays, and how appropriate it is for the task) and the physical environment

(temperature, humidity, lighting, noise, vibration) as a factor that cause ergonomic in the use of ICT.

Frustration is an emotion that occurs in situations where a person is blocked from reaching a desired outcome. In general, whenever we reach one of our goals, we feel pleased and whenever we are prevented from reaching our goals, we may succumb to frustration and feel irritable, annoyed and angry. Typically, the more important the goal, the greater the frustration and resultant anger or loss of confidence. Frustration is not necessarily bad since it can be a useful indicator of the problems in a person's life and, as a result, it can act as a motivator to change. However, when it results in anger, irritability, stress, resentment, depression, or a spiral downward where we have a feeling of resignation or giving up, frustration can be destructive.

Frustration is also a commonly reported phenomenon in research on reactions to information and communication technology and other technologies. A high proportion of information and communication technology users seem to report momentary and sometimes persistent feelings of frustration [4]. Frustration can have a deleterious impact on their psychological health and wellbeing. Cooper [5] developed a comprehensive model of computer frustration. He argued that frustration with technology can arise in various ways, although typically, these are linked with an inability to achieve one's goals in a timely fashion. Frustration may increase a person's arousal level and that, while a certain amount of arousal leads to optimal performance, excessive arousal can be debilitating in terms of both performance and wellbeing. The study identified the major sources of frustration in computer usage. These include time lost due to unclear error messages, unpredictable delays in programme reaction times, poorly designed interfaces that may be difficult to comprehend and utilize, unduly long

download times, features that are difficult to identify and locate, and lost connections.

There is accumulating evidence that user's frustration has a substantial impact on both work productivity and students' emotional status. Klein et al. [6] posited that use of technology often has unpleasant side effects, which may include strong negative emotional states that arise during interaction with computers. Frustration, confusion, anger, anxiety and similar emotional states can affect not only the interaction itself, but also productivity, learning, social relationships and overall well-being. Li O'Brien et al. [7] reported that sadness and depression, boredom, and stress were common triggers of intensive Internet use. The study stated further that sleep deprivation, academic under-achievement, failure to exercise and to engage in face-to-face social activities, negative affective states, and decreased ability to concentrate were frequently reported consequences of intensive Internet use/Internet overuse.

Frustration can be serious obstacles to effective use of technological wellbeing. Unsurprisingly, it has been noted that frustration with technology can lead to user avoidance. However, with the current proliferation of information and communication technology, it may be impossible for many students to avoid exposure to this technology. Continued frustration may create feelings of importance and mood reduction, which clearly will influence an overall sense of wellbeing, including depression in the longer time.

Often times ICT may become an intrusion on normal everyday life, is a source of perceived stress, and have other ill health effects. According to Massimini et al. [8], ICT use among college students may be a vicious, unhealthy cycle of behavior. The paper concluded that ICT is a major intrusion affecting sleep, time management, and perceived stress as well as implications in students' communication. Stress can arise from the use of ICT when the volume of information and demands on communication become too great to deal with. This overabundance of choices makes it difficult to decide what is not important. Reactions to stress differ greatly and even the same individual can react differently to the same stress factors at different stages in life. Our reaction to stress depends on previous experience, general health, our interpretation of the situation, perceived usefulness and perceived ease of usefulness. People's cognitive abilities vary as well, which means that the same quantity of information will yield differing mental loads and energy requirements [9].

Mark et al. [10] found a significant positive relationship with stress and daily time spent on computers. The study concluded that stress is positively associated with the amount of multitasking. Conversely, stress is negatively associated with facebook and social media use. Heavy multitaskers use significantly more social media and report lower positive affect than light multitaskers. Night habits affect multitasking the following day for late-nighters show longer duration of computer use and those ending their activities earlier in the day multitask less.

Research Questions

The following research questions were answered by the study

What factors causes stress and frustration on the use of ICT by undergraduate students for research?

What are the effects of stress and frustration on the use of ICT by undergraduate students for research?

What are the possible steps taken by the institutions to curb stress and frustration on students in the use of ICT for research?

Literature Review

ICT has changed working life in many ways. We no longer need to share a location to share information and work together. Information and communication technology is also excellent for quantifying and optimizing work processes. It's plain to see that ICT has simplified and streamlined our work. There are, however, mechanisms at play in ICT that can increase the strain on individual at the workplace. In the long run, this can lead to stress and ill-health. Information and communication technology can feed us information considerably faster than we are able to absorb it. We are limited by our cognitive capacity, that is to say our ability to process, manipulate and store information. The cognitive load can simply become too great. People need a balance between action, reflection and recovery. The new technology gives us more and more action and less and less reflection [11].

Unconsciously, we adjust our expectations of what we should be able to handle to match the speed and opportunities that ICT offers, with this mental demands rises. Information is easily and quickly available via e-mail, mobile phones, intranets, shared documents etc. If the information is there, we get the feeling we have to make a decision-read or ignore, fix or develop. Attempt to take a decision might result into stress situation [12]. ICT stress can arise when the volume of information and demands on communication become too great to deal with. An overabundance of choices makes it difficult to decide what is not important. Stress that is associated with ICT affects our cognitive processes, but the biological and psychological effects do not differ from other forms of stress. It resulted into falling back easily on the brain's established routines. In making decisions we pay no attention to new information. Instead, our brains use familiar, deep rooted scripts on decision making programs to handle an overwhelming amount of information.

Lehnert [13] described stress as a complex, dynamic process of interaction between a person and his or her life. He explained further that it is the way we react physically, mentally and emotionally to the various conditions, changes and demands of life. It is a concept regarded as a specific irritating event, life cycle transitions and conflicts with either your belief system or your surroundings throughout a time period. Covey [14] explained that in some school of thought stress is regarded to be a relative term in the sense that what is irritating and stressful to one person may make no difference to another. In his suggestions he came out with a concept that "in an independent situation every P problem is a PC opportunity".

Reactions to stress differ from individuals, even the same individual can react differently to the same stress factors at different stages in life. Our reactions depend on our previous experience, our general health and our interpretation of the situation. People's cognitive abilities vary as well, which means that the same quantity of information yields differing mental loads and so energy requirements. Some early signs of stress may include concentration difficulties, memory problems, increased irritation, reduced job satisfaction and a sense of loss of control. Under long-term stress our capacity for concerted goal oriented behavior falls and our performance suffers in general [12].

National Association of School Psychologist (2012) [15] identified two major type of stress; they are good stress and bad stress. Good stress is that optimal amount of stress that energized and motivated us

to do our best at work. It encourages us to develop effective coping strategies to deal with our challenges, which ultimately contributes to our resilience. Bad stress occurs when our coping mechanisms are overwhelmed by the stress and we do not function at our best. Stress can become distress when we are unable to cope or when we believe that we do not have the ability to meet the challenges. The solution is to adapt, change, and find methods to turn that bad stress into good stress.

Ajala [11] categorized stress into two categories; positive and negative. Positive stress pushes an individual to complete a task or do something. Negative stress gets in the way and puts demands on your mind and body. Stress can be categorized using different criteria; generally stress is grouped into physical and psychological. Physical stress irritates or brings immediate or long term negative effect on your physical or bodily health. It does not necessarily affect your psychological (or mental) state. Psychological stress brings immediate or long term irritation or negative effect on your psychological or mental state. This may not necessarily have any immediate effect on your physical state. These two groups can be very interactive i.e. your physical state can affect your psychological state and vice versa. Lehnert [13] also categorized stress as acute (immediate) which can be one-time incident that usually comes and goes quickly. Its effect he described can last from minutes or hours to days or weeks. Whereas the chronic (long-term) which can be caused by a continuing string of stressful incidence of an ongoing situation.

National Association of School Psychologist (2012)[15] identified three major sources of stress; stress from school, stress from home and stress from peer group. Stress from school can arise from an unstructured classroom, unclear or unreasonable expectations, or fear of failure. Stress from home occur through a lack of family routines, over-scheduling, prolonged or serious illness, poor nutrition, change in the family situation, financial problems, family strife or abuse, or unclear or unreasonable expectations. Stress from peer-related can be a result of changing school buildings, having to deal with a bully, fitting in the crowd, or moving to a new community. Stress tends to be additive in nature and with children can result in inappropriate behaviors, academic difficulties, or health problems.

Nawe [16] also explained how role-conflict can cause stress. Library and information professionals have various supervisors who do not agree on what the employee should be doing. Whereas stress is also caused by role ambiguity which is present when an employee does not know that for which he or she is responsible. She explained also that when employees do not use their skills, it can be as stressful as being overworked whereas librarians may experience stress in assisting patrons because they do not have time to become an expert on each and every system. Kinman [17] reported from his study that there were no significant differences found between men and women of United Kingdom (UK) academic and related staff in patterns of stress levels, nor were there gender differences in terms of expectations of future job-related stress. But he expressed that levels of reported work related stress were associated with age. He revealed that stress levels increased with age, to peak in the decades 41-50 and 51-60 while perception of stress decreased significantly, however in the decade 61-70.

The economic impact of work-place stress was properly discoursed by Kinman [17]. He expressed the fact that in UK the impact of work-place stress is not inherently bad nor necessarily too destructive but it is obvious that this cannot be compared with the African situation in which the condition and work environment is incomparably worse to that of UK. His observation and view that work-place stress can have a

wide ranging and negative impact on the well-being of the individual and his or her day-to-day functioning is true of work-place in many African countries. This he said is observable at physical level (e.g. exhaustion, headaches, high blood pressure), at psychological level (e.g. depression, anxiety, low self-esteem), at cognitive level (e.g. absent mindedness, failure of attention and memory), and at behavioral level (e.g. absenteeism, substance abuse, aggressive behavior, usage of abusive language, low work output etc.). This directly or indirectly always leads to organizational lower output or turn-out and ineffectiveness. Kinman [17] then concluded by observing that it has been suggested that occupational stress is now considered to be amongst the top five work-related health problems in the United State of America. This may not be far from being the same in Nigeria, and library and information profession is now becoming a high risk one. Thus a quick understanding of the stress factors and timely work related clinical trial is desired.

American Psychological Association (2003)[18] identifies the following as symptoms of stress: worry, anxiety, panic, sadness, depression, feeling pressured and hurried, irritability and moodiness, difficulty concentrating and making decisions, stomach problems, headaches, chest pain (physical symptoms), allergic reactions such as a skin rash, asthma, sleeping problems, feeling of overwhelmed, helpless, drinking too much alcohol, smoking, drug abuse, sexual dysfunction and eating too much or not enough. National Association of School Psychologist (2012)[15] identifies the following as symptoms of stress; irritability or unusual emotionality or volatility; sleeping difficulty or nightmares; inability to concentrate; drop in grades or other functioning; toileting or eating concerns, headaches or stomachaches; unexplained fears or increased anxiety (that also can take the form of clinging); regression to earlier developmental levels; isolation from family activities or peer relationships and drug or alcohol experimentation. Gross [19] has three broad classes of workplace stress: career, task, and organizational.

National Association of School Psychologist (2012)[15] also identified some factors that help in the prevention of stress as positive problem solving and coping skills; close and supportive relationships at home and school; clear expectations from a task; permission and ability to learn from mistakes; developing competencies (academic, social, extracurricular, and life skills); consistency, positive discipline; ability to express feelings appropriately; feeling physically and emotionally safe; good nutrition and exercise and time to relax or do recreational activities.

Alginahi [9] reported that, the dynamic relationship between the person and the environment is stress perception and the reaction is especially magnified in university students. The problems and situations encountered by university students may differ from those faced by their non-student peers. The environment in which university students live is quite different while everyone is facing stress of some sort or another at work, home, grocery stores, on the street or anywhere, students face different kinds of stress with the continuous evaluation that they are subjected to, such as weekly and monthly tests and projects, which is not often seen by non-students. The pressure to earn good grades and to earn a degree is very high. Earning high grades is not the only source of stress for university students. Other potential sources of stress include excessive homework, unclear assignments, and uncomfortable classrooms. In addition to academic requirements, relations with faculty members and time pressures may also be sources of stress. Relationships with family and friends, eating and sleeping habits, and loneliness may affect some students adversely.

The factors that affect the use of information technology by students in Nigerian university libraries varies from availability of resources and materials, management and administration, stress and frustration in the use of ICT as well as students attitude and disposition. ICT can be used in education to support constructivist teaching methods such as collaborative learning. Despite the usefulness of ICT, users may encounter stress and frustration while using them. Stress and frustration occur when there is a negative impact on physical and mental wellbeing. That can result from the inability to access needed information on the net, work overload, and unrealistic deadlines. University libraries use ICT with the goal of transformation of the library and the university with the power of these new technologies. This transformation may be inhibited by undue stress and frustration.

Ergonomics is the science concerned with designing safe and comfortable machines for use by people. This includes furniture design and the design of peripherals that you need to use, such as mouse and keyboard. Alginahi [9] also identified the following as effective ways of reducing problems that is associated with ergonomic in the use of ICT by undergraduate students for research.

The right lighting can reduce eyestrain, neck strain and headaches. Sunlight is the best light, but make sure it does not create glare on your computer screen. The proper desk will let you find the perfect working position. It should be deep enough to support your arms when you work at the computer. Place your computer screen at eye-level or just below, for optimal comfort, set it about 45 cm (18 in.) from your face. Sit up straight in your chair. Keep your feet flat on the floor and your knees slightly lower than your thighs. Choose an office task chair that lets you tilt forward to reach objects in front of you and backward to stretch your arms when you are tired. When you type, hold your fingers, wrists and lower arms in a straight line from your keyboard. Keep equipment that you use a lot, like your telephone and computer keyboard, within a distance of about 75 cm (30 in) when you are sitting at your desk. Keep other storage and equipment farther away. This encourages you to change working positions during the day.

Method and Instrument

The descriptive survey research design was adopted for this study. This method was adopted because it is a suitable and efficient way of studying large populations. The survey method allows only a sample population to be used to represent the entire population. The fact that this study is concerned with a large population of students in selected university makes the descriptive design to be the most desirable for the study. Ogun State has one Federal Government owned university, two

State Government owned universities and eight privately owned universities. Each selected university was considered as representative of each of the categories of universities in existence in Ogun State, Nigeria. One percent of the total number of admitted students for 2013/2014 academic session in each selected school was used for the study.

S No.	Colleges	Sample population	Sample size
1	Federal University of Agriculture, Abeokuta, Ogun State	11.109	111 (1%)
2	Tai Solarin University of Education, Ijebu Ode, Ogun State	8.798	88 (1%)
3	Crescent University, Abeokuta, Ogun State	5.103	51 (%)
		25.010	250

Table 1: Sample population and sample size. Source: Field study (July, 2014).

The sampling technique adopted for this study was a simple random sampling technique. Due to the large number of the population, one percent of respondents were sampled. A self-constructed questionnaire was used for data collection in this study. The questionnaire was titled: effects of stress and frustration on use of information and communication technology by undergraduate students for research (QESFUICTRUS) in selected Universities in Ogun State of Nigeria. The questionnaire was divided into three sections. Section A captured the experience of respondents using ICT. Section B elicited response on effects of ergonomics and frustration on users of ICT while Section C was on Solution to impediments in the use of ICT. All the sections followed the Likert-type questions. Questionnaires were administered to the respondents with the help of research assistants. Analysis of data was based on descriptive statistics, such as frequency, counts and percentages. Tables and figures were used in expressing views and opinions of the respondents.

Data Analysis

Research Question 1

What factors causes stress and frustration on the use of ICT by undergraduate students for research?

Possible reasons	SA	A	D	SD	X	SD
Malfunctioning of computer parts	21	56	79	56	2.68	1.090
Computers takes too long to respond to commands	30	93	52	34	2.29	1.067
Delay in downloading and uploading files	14	57	91	52	2.74	1.003
Loss of materials downloaded	21	77	72	42	2.52	1.045
Poor computer networking	23	75	69	45	2.55	1.044
Inability to save documents to external storage device or medium	17	85	69	42	2.53	1.014
Problems encountered while using Computer peripheral like printer, scanner etc.	19	76	79	37	2.50	1.028

System complexity	18	78	79	30	2.39	1.066
Lack of personnel's to assist users in solving technical problems	19	74	67	50	2.57	1.083
Change in computer hardware and software	14	64	98	35	2.70	1.681
Obsolescence of existing computer hardware and software	22	90	68	30	2.37	1.015
ICT savvy (lack of interest in ICT use)	21	73	74	42	2.51	1.071
Poor expectation from ICT	17	63	78	48	2.56	1.127
Transient nature of information sourced from the web	15	73	78	41	2.52	1.079
Slow internet connection	13	57	71	72	2.83	1.075

Table 2: Factors Inhibiting Stress and Frustration.

Table 2 shows that of all the fifteen factors highlighted, 'slow internet connection' is the strongest factor that inhibit stress and frustration on the use of ICT by undergraduate students for research, with $X=2.83$ and $SD =1.075$. This is followed by 'delay in downloading and uploading files' by students with $X=2.74$ and $SD=1.003$. The table also

show that the time it takes computer to respond to command and obsolesce of existing computer hardware and software are the least factor that inhibits stress and frustration on the use of ICT for research by undergraduate students $X=2.29$; $SD=1.067$ and $X=2.37$ and $SD=1.015$.

S No.	ICT Activities	SA	A	D	SD	X	SD
1	Using ICT infrastructure in my university is stressful	22	67	61	71	2.81	1.013
2	It is frustrating using ICT infrastructure in my university	26	69	81	41	2.62	0.990
3	The distance to available ICT infrastructure is not encouraging	20	69	75	55	2.72	0.982
4	I am not always comfortable with the use of ICT infrastructure in this University	28	86	68	38	2.50	0.950
5	Problems such as stress and frustration are affecting the use of ICT infrastructure in my university	24	75	64	56	2.66	1.016

Table 3: Students' Experience in the use of ICT.

From the results above, it is apparent that undergraduate students experience stress and frustration in the use ICT for research. Consequently, students were unable to get the best from ICT infrastructure from the University environment. The result also shows that it is highly stressful for undergraduate students to use ICT infrastructure in University environments due to its stressful nature, this is indicated with highest mean score of 2.8 ($X=2.8$) and standard deviation of 1.013 ($SD=1.013$). It was also observed from the table that

undergraduate students are not always comfortable with the use of ICT infrastructure in university environment, this is indicated with lowest mean score of 2.50 ($X=2.50$) and Standard Deviation of 0.950 ($SD=0.950$).

Research Question 2

What are the effects of stress and frustration on the use of ICT by undergraduate students for research?

S No.	Possible effects	SA	A	D	SD	X	SD
1	Lack of interest by the users to continued using ICT tools	18	59	80	58	2.74	1.035
2	Phobia in the use of ICT facilities	21	78	74	38	2.48	1.041
3	Low student expectation from the use of ICT tools	12	65	82	53	2.70	1.034
4	Loss of interest in learning ICT skills	26	73	68	46	2.52	1.071
5	Loss of confidence in the use of ICT facilities	14	73	70	49	2.55	1.119
6	Damage to ICT infrastructure	19	77	70	46	2.55	1.053
8	Low morale in relying on ICT for research	23	72	69	51	2.60	1.049

9	Low outcome from the use of ICT for research	24	58	82	49	2.62	1.068
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Table 4: Effects of Stress and Frustration in the Use of ICT.

Result on table 4 above revealed that ‘lack of interest by the user to continue using ICT tools is the greatest effect of stress and frustration on the use of ICT by undergraduate students for research with X=2.74 and SD=1.035. This has resulted into low student expectation from the use of ICT tools with X=2.70 and SD=1.034. It also shown that ‘phobia in the use of ICT facilities and loss of interest in learning ICT skills are the least effect of stress and frustration on the use of ICT by

undergraduate students for research (X=2.48; SD=1.041 and X=2.52; SD=1.071) as shown by their mean score and standard deviation respectively.

Research Question 3

What are the possible steps taken by the institutions to curb stress and frustration on students in the use of ICT for research?

S No.	Possible solution	SA	A	D	SD	X	SD
1	Improved power supply to the universities	4	21	84	103	3.39	2.844
2	Increase in funding of universities	12	21	66	96	3.27	1.169
3	Student enlightenment on the importance of ICT	4	19	65	95	3.36	1.206
4	Training students on the use of ICT equipment	3	18	62	105	3.45	1.119
5	Creating a conducive environment for ICT use by student	7	17	61	106	3.41	1.129
6	Integration of ICT education into students curriculum	3	23	58	105	3.37	1.168
7	Creating internet hotspots for browsing	10	19	58	105	3.34	1.181
8	Healthy relations between student and ICT personnel	8	24	60	93	3.26	1.263
9	Reduction in cost of using ICT infrastructure	9	36	54	93	3.19	1.173
10	Setting up trouble-shooting spots	11	26	55	52	2.89	1.105

Table 5: Possible Steps to Curb Stress and Frustration.

Table 5 shows that ‘training students on the use of ICT equipment would be a great mean of curbing stress and frustration on students in the use of ICT for research’ with X=3.45 and SD=1.119. This is closely followed by ‘creating a conducive environment for ICT use by school authority’ with 3.41 and SD=1.129. The least possible step taken by the institutions to curb stress and frustration on students in the use of ICT for research is ‘reduction in the cost of using ICT infrastructure with X=3.19 and SD=1.173.

Discussion

It was found out that when stress and frustration persist among the undergraduate students, lack of interest by the user (undergraduate students) to continue using ICT tools becomes the greatest effect of stress and frustration and this was buttressed by Pew [20] who showed in his study that researchers have shown that lack of frustration contributes to digital divide and people avoid the use of Internet because of past frustrating experience.

To curb stress and frustration among student in the use of ICT, this study shows that training of students on the use of ICT equipment would be a great mean while creating a conducive environment for ICT use by the institution authority will abolish stress and frustration among the undergraduate students. This is in line with Mbaba et al. [21] affirming that the limited use of technology for research was not only due to lack of facilities but also due to students knowledge skills, beliefs and expertise, student needs more training not only in

computer literacy but also in coherent strategies to enable students fully integrate ICT as pedagogical tools even in the classroom.

The purpose of this study was to find out the effects of stress and frustration on the use of information and communication technology ICT by undergraduate students for research in selected universities in Ogun state. The findings of each question reveal the following implications. From this study, it was revealed that stress and frustration contribute negatively on students in their use of ICT for research. This implies that there is a need to create conducive environment for students and guide the student in the proper ways of getting the best from the ICT infrastructures. There is a need to create cyber cafes in student hostels for conveniences of student when using ICT for research. There is need for the management to give good internet service provider to students as slow internet connection contributes to stress and frustration among the students.

The study also highlighted that there was a significant effect of stress and frustration as a result of lack of interest by the students to continually use ICT for research. This implies that there is need for government, school administrators or stakeholders to draw out programmes or training that will interest the students towards computer education.

Finally, the study has also revealed that training of students on the use of ICT equipment would have a great impact in reducing stress and frustration on students in the use of ICT for research.

Summary of Findings

This study investigated the effects of stress and frustration on the use of information and communication technology ICT by undergraduate students for research in selected universities in Ogun state. Three research questions were used to guide the study. The findings are summarized as follows:

- Stress and frustration has significant effect on students in the use of ICT for research
- Long distance from hall of residence to ICT facilities is most significant frequent type of stress and frustration that students encountered in the use of ICT for research
- Of all the fifteen factors highlighted, 'slow internet connection has the most significant factor that inhibits stress and frustration on the use of ICT by undergraduate students for research
- Lack of interest by the user to continue using ICT tools has the most significant greatest effect of stress and frustration on the use of ICT by undergraduate students for research
- Training students on the use of ICT equipment would have a great significant means of curbing stress and frustration on students in the use of ICT for research.

Conclusion

This study shows that undergraduate students experienced stress and frustration in the use of ICT for research. Distance from students' hall of residence to internet facilities is mostly responsible for stress and frustration encountered in the use of ICT. Slow internet connectivity is the most significant factor that inhibits stress and frustration in the use of ICT by undergraduate student for research. Stress and frustration in the use of ICT for research also contributed negatively to the student loss of interest in its use. Training students on the use of ICT equipment will reduce the stress and frustration encountered in using it for research. The installation of functional wireless connectivity for free browsing on campus would create simultaneous access for many users, and give internet users self-service to replace the unreliable service that have led to stress and frustration. Any university community without functional ICT connectivity will eventually become obsolete.

Recommendations

In view of the conclusion stated above, the following recommendations are put forward. In order to ensure the effective use of Information and Communication Technology by undergraduate students for research in Nigerian universities, the following should be considered:

- There is a need to create conducive environment for students and guide the student in the proper ways of getting the best from the ICT infrastructures
- There is a need to create cyber cafes in student hostels for conveniences of student when using ICT for research
- There is need for the management to give good internet service provider to students as slow internet connection contributes to stress and frustration in the use of ICT among the students
- There is need for government, school administrators or stakeholders to draw out programmes or training that will interest the students towards computer education

- There is need for school management to create free hot spot browsing for students in the school environment.

Conflict of Interest

This study was originally carried out by the authors.

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