Impact of ICT facility on Student's Academic Performance in Jimma University, Ethiopia

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ABSTRACT

In the present age, information and communication technology (ICT) plays a central role in the development of modern economies and societies by the Organization for Economic Cooperation and Development. Today's students integrate technology into all aspects of their lives for multiple purposes particularly learning, socializing, entertaining and shopping Asselin, Moayeri as well as doing homework. This research has been conducted on the impact of ICT facility on student's academic performance in Jimma University College of Natural Sciences in 2009. The aim of this study was to find out the difference between the uses and non-use of ICT and find out the existing gaps in their academic performance. Cross-sectional survey method was used and from the total population of 1155, by using simple random sampling the researcher reduced to 230 and did the study. The researcher used different methods of data collection like observation, questionnaire and interview. The researcher interviewed 21 respondents and questionnaires were distributed to 209, wherein 184 (88%) have responded. The collected data was analyzed using SPSS software and MS Excel. The result of the study indicated that most students have searching skills, they have very good satisfaction with preparing power points, searching materials and search sample question papers by using ICT. Based on the findings most of the students were using the computer as sources of ICT services and the accessibility to the internet was good. The researcher recommended the ICT center, accessibility and usability of ICT must increase with more number of professionals to teach the students for better accessing and searching.

Key Terms: ICT, Academic Performance, Jimma University, Internet Access, Students, Searching

INTRODUCTION

Many countries have invested in information and communication technologies as a way to pursue their educational goals. ICTs are generally regarded as technologies that support an individual's ability to manage and communicate information electronically, and include hardware such as computers, printers, scanners, video recorders, television, radio, and digital cameras; as well as the software and systems needed for communication, such as the Internet and e-mail Bialobrezeska & Cohen. The impact or the use of ICT in the student's academic performance plays a vital role in their study life. ICT in the academic performance is used for many purposes in video conferencing, learning process, and teaching process, solve different problems using ICT in large organization and companies. The other impacts of ICT in student performance were evolving technologies and their effects are difficult to isolate from their environment and the standard approach focuses on achievement and curricula the student academic performance seems nowadays understanding of the role and nature of technologies. It needs to be specified in order to meet the needs expressed by students and to be more specific term that stresses the role of unified communications and the integration of telecommunications, computers as well as necessary enterprise software, middleware, storage, and audio-visual systems, which enable users to access, store, transmit and manipulate information adapted to the local context and constraints Sharma. The impact and use of ICT in academic performance become a recent topic of argument in the area of Information
Technology in different sectors mainly in education, Educators use ICT sources like internet, wireless, local area networks and wide area networks as modern tools that enable to modify the teaching methods in order to improve students’ performance. Educational institutions have adopted ICT based teaching and learning method and offering ICT related academic programs. Students are avoiding the ICT facilities using different smart devices and internet and it is necessary tool for creating opportunities to use different software facilitating learning, the access to networks or communicating by video conferencing, technologies facilitating people’s functional independence, and social inclusion, and also the transfer of knowledge between all the interested parties and collaborative decision making. So it is essential to measure the students’ openness to ICT and its impact on students’ performance Nonis & Hudson1. Academic performance is often conceptualized as referring to the different stages of the educational scene and as one of the goals pursued in the teaching-learning process, sought after by the educational authorities, teachers, parents and of course the students themselves. During this process, the students have to be transformed through a sequence of active work and enriched not only at the cognitive level but also in skills, aptitude, interest and ideas that are needed for successful in academics, personal and social life Ben & Dahmani2. Generally the impact of ICTs in academic student performance can empower teachers and learners, promote change, transforming teaching and learning processes from being highly teacher-dominated to student-centered, and transforms result in increased learning gains for students, creating and allowing for opportunities for learners to develop their creativity, problem-solving abilities, informational reasoning skills, communication skills, and other higher-order thinking skills. One of the enduring difficulties of technology use in education is that educational planners and technology advocates think of the technology first and then investigate the educational applications of technology Owusu-accheaw3.

ICT in JU was established in 1998 E.C. by which it improves the service of ICT facility for students’ academic performance throughout the year. But it has a little problem to reach the goal of JU for academic performance. For a long time, the major task of the computer center had been creating a conducive environment for ICT related courses by providing computer labs and relevant software and hardware support. When JU started to integrate ICT in its system, it established the Computer Center to handle issues related to ICT. Therefore the research has been planned and conducted on these resources.

Statement of the Problem

Students’ academic performance remains central in any academic achievement debate. ICTs provide a window of opportunity for educational institutions and other organizations to harness and use technology to complement and support the learning and research process. However, despite the enormous advocacy of ICT aided for research and learning, the JU still faces the challenge of how to transform students learning the process with skills to function effectively in this dynamic, information-rich and continuously changing environment for their academic performance. The major problems that are faced in the labs are: lack of internet connection, lack of computer access means that in each department have only one lab except information, lack of awareness about accessibility and usability of the computer in their academic performance, lack of more professionals to train in the accessibility and usability of ICT. The other problems were faced in the academic performance. All students have no equal access with other students. The other point raised as a problem was using ICT facilities for doing unnecessary activities; because of free access to ICT and related services, some students lose their time accessing unnecessary and forbidden sites. The last but not least problem was many Jimma university students’ find it difficult to effectively use technology in the classrooms and other areas of research and learning. Therefore, the research had planned to find out the impact of the ICT facility on students’ academic performance with the following research questions:

- What are information communication technology resources that students use for their academic performance at Jimma University College of Natural Science (JUCNS)?
- What is the level of skills that students use to access the internet in their academic performance in JUCNS?
- What makes difference between students who use computer facility and who do not use computer facility in their academic performance in JUCNS?
- What are the challenges faced to get ICT facility access for students’ academic performance in JUCNS?

Objectives

- To identify the resources of ICT used for academic performance
- To investigate the level of skills that students use to access the internet
- To identify the difference between the students who use ICT facilities and who do not use ICT facilities
- To find the challenges for accessing or using ICT facilities by the students for their academic performance in JUCNS

Scope

This study is limited to the impact of ICT facility on students’ academic performance in College of Natural Sciences, Jimma University (in 2009, E.C). After the completion of this research, the results may provide a basis for ICT improvement in JU, as there are some recommendations to the responsible body. The study will also find out the existing gaps in the adoption of ICT in the operations of performance status in achieving their academic performance of students’ in the college of natural sciences. The other significance is that it will act as the baseline for the other researcher.

Literature Review

Information Communications Technology refers to any device or system that allows the storage, retrieval, manipulation, transmission and receipt of digital information. For example, personal computers, digital television, email, robots and it includes software and hardware devices such as: Computer, scanner and digital cameras and it is often used as an extended synonym for information technology, but is a more specific term that stresses the role of unified Minaret International University Studies communications and the integration of telecommunications (telephone lines and wireless signals), computers as well as necessary enterprise software, middleware, storage, and audio-visual systems, which enable users to access, store, transmit, and manipulate information” Amin4. ICT depends on the local culture and the particular ICT available and how it is configured and managed. The understanding, management and configuration of the available technology might vary the concept of ICT from collection of
tools and devices used for particular tasks, e.g., publishing, course delivery, transaction processing and an organized set of equipment (like a ‘workshop’) for working on information and communication components of integrated arrangements of devices, tools, services and practices that enable information to be collected, processed, stored and shared with others in a comprehensive system of people, information and devices that enables learning, problem-solving and higher order collaborative thinking, that is, ICT as key elements underpinning an arable workspace Moursund.1

Related works are studied on the impact of ICT facility on student’s academic performance in local and global research. ICTs have recently gained grounds well of interest. It is a significant research area for many scholars around the globe. “Their nature has highly changed the face of education over the last few decades. For most European countries, the use of ICT in education and training has become a priority during the last decade”. “However, very few have achieved progress. Indeed, a small percentage of schools in some countries achieved high levels of effective use of ICT to support and change the teaching and learning process in many subject areas”. Others are still in the early phase of Information and Communication Technologies (ICTs) adoption Khan & others6. In modern-day education, students are not supposed to be confined only within the learning in a classroom context. They are expected to explore the vast horizon of knowledge made available today through ICT. This paper explores the relationship between ICT and the performance of students at the undergraduate level. The study found that the impact of ICT on the academic performance of the students was very negligible. Moreover, it has been found in the research that ICT access provided to the students are not utilized to enhance academic performance but it is rather a source of recreation. The study also suggests steps that if taken would ensure better use of ICT by the students and, in the long run, develop a healthy and fruitful relationship between ICT and academic performance Islam & Fouji11.

Academic Performance

ICT’s use by teenage students aged between 12 and 21 and the perception of dependency was studied using the questionnaire in 27 centers of education in Burgos (Spain). It was found that majority of the have a balanced relation with ICTs. It acts as a valuable resource and encourages proactive measures for the self-development of individuals AnunciBay2. Skryabin and others investigated how national ICT development level and individual ICT usage influenced the achievements in reading, mathematics, science for 4th and 8th - grade school students15. International database was employed and found that the national ICT development level is the significant positive predictor for individual academic performance in all three subjects. Academic performance is the outcome of education the extent to which a student, teacher or institution has achieved their educational goals. The operative measurement of academic performance is the most common criteria which have been the grades which teachers give to students upon the completion of some evaluation system. An notably, the oral, written or practical test that students complete over the course of the school year. It can be said that these grades are one of the most predictive factors of school performance and thus, would also constitute the main indicator of academic success. Several factors have been alleged to affect students’ academic performance Agbanor & Ekuobase14. However, as a measure of academic performance, teacher-given grades have well-known limitations. Grades are composite measures that account not only for students’ content mastery but often for other factors, such as their class participation, attitudes, progress over time, and attendance. Both general and special educators are known to consider these various factors when grading, but to emphasize different factors. For example, special education teachers are less likely than general educators to consider homework or attendance to be important in grading student performance, but are more likely to consider in-class participation to be important. Moreover, substantial variations in grading practices occur across teachers, schools, and school districts. Despite these complicating factors, student grades still are an important indicator within the academic performance outcome domain for students with disabilities because they indicate success by a teacher’s standards and success relative to other students in a given classroom Blackorby, Chorost, Garza, & Guzman11.

Impact of ICT in Students’ Academic Performance

The use and impact of ICT on students’ academic performance in higher education is not immaculate and found mixed results in the literature. Earlier researchers have found ICT provides a cleaner and more reliable way of the effect of ICT on students’ performance in higher education. The evidence on the effect of computers and internet in university on students’ academic performance is much more limited. The effect of computer use on student performance is questionable. Similarly report that increased uses of computers and internet connections have had no measurable impact on any measure of students’ achievement, additionally found that although Internet use increases enjoyment. There are no artistically significant gains observed in student’s academic performance. In the same way, identified that ICT impact on schools and concluded that the impact of ICT on learning outcomes is unclear. Identically Mushtaq, Irfan and Nawaz Khan, Sheltina conducted a study and found significant but small positive impact of students’ performance due to ICT use. But they showed that some ICT seems to be positively correlated to the performance while the others are not Mushtaq & Nawaz Khan14. The direct link between ICT usage and students’ academic performance has been the focus of extensive literature during the last two decades. Several studies have tried to explain the role and the added value of these technologies in classrooms and on students’ academic performances. The first body of literature explored the impact of computer usage. Since the internet revolution, however there has been shift to the literature that focuses more on the impact of online activities: use of internet educative online platforms, digital devices, blogs, wikis, etc. While most of the researches show a mixed result, a few demonstrates that there is no evidence of a key role for ICT in higher education. The impact of ICT on learning is currently in relation to the use of digital media, primarily computers and internet to facilitate teaching and learning. ICTs are the technologies used in conveying, manipulation and storage of data by electronic means, they provide an array of powerful tools that may help in transforming the present isolated teacher-centered and text-bound classrooms into rich, student-focused, interactive knowledge environments Ben & Dharmi17.

The rapid advancement of ICT has dramatically increased technology use in language teaching and learning. With the Internet/World Wide Web creation and progression, for example, teachers now have more options to create effective and innovative instructional materials and teaching methods. Some of them argued that teachers...
have a pivotal role in the adoption and implementation of ICT in their teaching and learning as they are the key to making learning happen. With the complexity and the richness of possible learning resources that the Internet offers, teachers face considerable challenges to create effective and efficient teaching approaches. The ultimate goal of creating this learning environment is to boost learning outcomes. Education reforms require teachers to adopt new as more responsibilities for learning are given directly to the students. This change requires that teachers be proficient in advising and guiding students through more autonomous, self-directed learning processes, while the same time monitoring curriculum standards achieved by students Islam & Fouji.

METHODOLOGY

This study used cross-sectional survey research method, by which the respondents can respond the required question freely without any fear and bias. This enables to get the real data. Since the methodology was a core feature of a research and important requisite for the validity of a result, it is necessary to develop an accurate, clear and validity methodology which is used to meet the objective of the study. This includes, research method, the population of the study, data gather procedures and method of the data analysis.

Population of the Study

The target population of the study was the students of Jimma University College of Natural Sciences (JUCNS). According to the information collected from Registrar's College of natural sciences, the total population of the study was in 1155 students. So the researcher was restricting the number of students by simple random sampling procedure. Most often it is not possible to study the entire population. Hence a sample which is a representative of the whole population is studied.

Method of Data Collection

Different methods of data collection instrument were used to assess the students for the ideas of the ICT supporting teams towards the internet and lab experiment usage of JU students. The researcher collected data by using different types of mechanism or methods like an interview, questionnaire and observations and for collecting the qualitative and quantitative data. The Researcher prepared a questionnaire related to the study and the same was distributed to the students' population from JU for finding out their academic performance. The observation was done in the overview of the usage of ICT facility in the lab class and ICT centers. For this purpose of physical and really happening occurrence of some events in the lab need to be observed physically with the researcher. An investigation needs to be set under the usage of ICT facility for the students from the viewpoint of the lab technicians and ICT team staff.

DATA ANALYSIS

Response Rate and Statistical Analysis

Out of the 209, 184 (88%) students have responded from the sampled population of the JUCNS. The collected data in relation to gender, age and educational status is presented in the Table 1 below:

From table 1, Out of 184(100%) respondents, 113(61.4%) were male and 71(38.6%) were female. This indicates that less number of females was participating in this study. It is found that 60(32.5%) of student respondents were in the age group of 18-20 years, 81(44.8%) students were in 21-25 years, 36(18.8%) were of 26-30 years and the rest 7(3.8%) were above the age of 31 years old.

It was requested in the questionnaire regarding the ICT services accessibility and 120(65%) students said yes and 64 (35%) said no. The same is given below as pie chart in fig. 1.

From the above table, 53(28.8%) respondents answered that they access ICT facilities through the Internet. 44(23.9%) respondents access by E-mail, 16(8.7%) respondents by Chatting, 73(14.7%) respondents have access to the resources available from the Blogs. 23(12.5%) respondents access ICT services from the wireless. Based on the above table, the huge amounts of respondents have access to Information and Communication Technology from the Internet.

According to fig. 2, 18(9.8%) respondents have access and use ICT services from the laboratory, 67(36.4%) respondents use services from the computer, 53(28.8) use ICT services from the phone and 72(39.2%) respondents have access from others.

![ICT services accessibility](image_url)

**Table 1: Different Types of Data of the Respondents**

<table>
<thead>
<tr>
<th>Category</th>
<th>Numbers</th>
<th>% age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender Male</td>
<td>113</td>
<td>61.41</td>
</tr>
<tr>
<td>Gender Female</td>
<td>71</td>
<td>38.59</td>
</tr>
<tr>
<td>Age interval (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-20</td>
<td>60</td>
<td>32.5</td>
</tr>
<tr>
<td>21-25</td>
<td>81</td>
<td>44.8</td>
</tr>
<tr>
<td>26-30</td>
<td>36</td>
<td>18.8</td>
</tr>
<tr>
<td>Above 30</td>
<td>7</td>
<td>3.8</td>
</tr>
<tr>
<td>Educational Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st year students</td>
<td>87</td>
<td>47.2</td>
</tr>
<tr>
<td>2nd year students</td>
<td>53</td>
<td>28.8</td>
</tr>
<tr>
<td>3rd year students</td>
<td>44</td>
<td>23.9</td>
</tr>
<tr>
<td>Total</td>
<td>184</td>
<td>100</td>
</tr>
</tbody>
</table>

**Table 2: ICT Resources**

<table>
<thead>
<tr>
<th>Resources available in ICT</th>
<th>Respondents</th>
<th>% age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet</td>
<td>53</td>
<td>28.8</td>
</tr>
<tr>
<td>E-mail</td>
<td>44</td>
<td>23.9</td>
</tr>
<tr>
<td>Chatting</td>
<td>16</td>
<td>8.7</td>
</tr>
<tr>
<td>Blogs</td>
<td>27</td>
<td>14.7</td>
</tr>
<tr>
<td>Social network</td>
<td>21</td>
<td>11.4</td>
</tr>
<tr>
<td>Youtube</td>
<td>23</td>
<td>12.5</td>
</tr>
<tr>
<td>Total</td>
<td>184</td>
<td>100</td>
</tr>
</tbody>
</table>

**Fig. 1: ICT Services Accessibility**

**Fig. 2: Resources Available Through the ICT Facility**
Table 3 indicates that the respondents have answered as they used the different type of ICT services to develop their academic performance and they were satisfied. From this, by using Internet for their academic performance the satisfied respondents were 88(47.5%) as good, 27(15%) as very good, 21(11.3%) were satisfied excellent, 25(13.8%) were satisfactory and 23(12.5%) of respondents answered as not satisfactory for using internet in their academic performance from 184(100%) of the total respondents.

By using E-mail for their academic performance the satisfied respondents were 53(28.8%) as good, 60(32.5%) as very good, 25(13.8%) were excellent, 28(15%) were satisfactory and 18(10%) of respondents answered as not satisfactory for using E-mail. By using social network for their academic performance the satisfied respondents were 90(48.8%) as good, 25(13.8%) as very good, 18(10%) were excellent, 28(15%) were satisfactory and 23(12.5%) of respondents answered as not satisfactory for using social networks.

By using Chatting for their academic performance the satisfied respondents were 56(30%) as good, 30(16.3%) as very good, 25(13.8%) were excellent, 41(22.5%) were satisfactory and 32(17.5%) of respondents answered as not satisfactory for using Chatting facility. By using Blogs for their academic performance the satisfied respondents were 60(32.5%) as good, 27(15%) as very good, 25(13.8%) were excellent, 23(12.5%) of respondents answered as not satisfactory for using blogs. By using Youtube for their academic performance the satisfied respondents were 46(25%) as good, 44(23.9%) as very good, 39(21.3%) were excellent, 30(16.3%) were satisfactory and 21(11.3%) of respondents answered as not satisfactory for using youtube in their academic performance from 184(100%) of respondents.

### Satisfaction Level For Academic Performance

It was requested in the questionnaire about the satisfaction level like Good, Very Good, Excellent, Satisfactory and Not satisfactory by the use of ICT resources for their academic performance. The collected data is given below in Table 4.

Table 4 indicates that the respondents use ICT facility for different purposes to develop their academic performance. From this, for doing assignment for their academic activity the satisfied respondents were 55(30%) as good, 41(22.2%) as very good, 39(21.1%) were satisfied as excellent, 28(15.2%) were satisfactory and 21(11.4%) of respondents answered as not satisfactory for doing assignment from 184(100%) of respondents. For preparing the power point for their academic activity the satisfied respondents were 44(23.9%) as good, 51(27.7%) as very good, 41(21.2%) were satisfied as excellent, 28(15.2%) were satisfactory and 20(10.8%) of respondents answered as not satisfactory.

For searching materials, the satisfied respondents were 46(25%) as good, 44(23.9%) as very good, 53(28.8%) as excellent, 37(20.1%) were satisfactory and 23(12.5%) of respondents answered as not satisfactory for doing assignment from 184(100%) of respondents. For preparing the power point for their academic activity the satisfied respondents were 44(23.9%) as good, 51(27.7%) as very good, 41(21.2%) were satisfied as excellent, 28(15.2%) were satisfactory and 20(10.8%) of respondents answered as not satisfactory.

It was requested in the questionnaire about the skills learned by using ICT at Jimma University, the collected data is given below as bar diagram in fig. 3:

From the above fig. 3, it is learnt that 71(38.7%) of respondents were answered as searching skills by use ICT, 27(14.8%) as learned browsing skills, 27(14.8%) answered as programming skills, 44(23.9%) as communication skills and 14(7.6%) of respondents was answered as other skills by using ICT from the total of 184(100%) respondents. From this, the researcher concluded that most of the respondents have learned searching skills, which is good for their academic performance.

### Observation Report

The researcher observed that the internet is not restricted, but most of the students use their time in Facebook, YouTube and films. Also in the computer lab, accessibility to network and most computers in the lab do not work easily to access more...
The impact of ICT in academic performance is important for students for saving their time when searching information easily. Most of the respondents gave the response about the positive impact of ICT in their academic performance to facilitate their work, saving time, cost by using ICT services and mostly they use a computer. In the technological world, where technology is playing an important role every day, it is essential to encourage and enhance the use of ICT in the academic arena to stay up-to-date with the rest of the world as well as to avail the opportunities to look globally the resources and opportunities. In this context, this study revealed that we still have a long way to go, as long as our orientation to ICT as an important tool to enhance academic performance is concerned. If proper steps are taken by the academic institutions to promote the use of ICT for academic purposes taking into consideration the findings and recommendations of this study that can reverse this unwanted scenario and move forward to have technology savvy student base. There are also some problems when the respondents access ICT services, like lack of computer rooms, laboratory rooms, connection i.e. LANs and WANs, most of the students have no skill to search, browsing and other ICT facilities. ICT seems to have a profound impact on the process of academic performance by offering new possibilities for learners and teachers. However, with the recent proliferation of ICT tools and services, students are finding it difficult to curtail its negative appeal. ICT helps to bring knowledge closer, it was established as most students make use of ICT and its tools for purely for communication and social networking purposes. Excessive use of these sites has influenced students to consider entertainment over learning and since the use of these tools is very addictive, it does reduce the average academic study time of students.

**Recommendations**

Considering the findings of the study, it was concluded that ICTs have the significant impact on the student academic performance and their access to more information. The impact was found to be relevant from respondents in ICT providing solutions to specific problems in the impact of ICT in the academic performance:

- The accessibility and usability of ICT must increase because all students can access more information in a short period of time.
- The connection problems might be solved, as some respondents cannot access any ICT services in academic performance.
- Give awareness about ICT services and resources when used or searching information using Google and others research engines.
- The high use of ICT facilities to be encouraged, which will be more relevant to improve skill acquisition and competence of the students in the academic performance.
- ICT resources training should be given to students on educational technology particular on the production and use of computerized instructional materials in the academic performance.
- University should be equipped with computer and internet facilities and other necessary instructional packages like slides and video presentations.
- Educators should continue to lay more emphasis and implement the concepts of educational technology as a means of enhancing the quality of education for academic performance.

**References**


