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### 10.1 Findings and Conclusions

The following findings and recommendations are made. Province where the student come from, year of study, sex of a student, age of the student, lack of practice, Nature of the BEd Programme, and use of ICT by the lecturers has an effect on the development of ICT skills. It is further worthwhile to mention that:

- (i) Year of study, age of the student, low use of ICTs by the lecturers, and Nature of BEd Programme affected negatively in the development of ICT skills.
- (ii) Sex of a student, Province where the student stay and Student's confidence in the use of ICT equipment, affected positively in the development of ICT skills.

Mukuba University has no mathematical software to use for mathematical work. This could be one of the factors accounting for the negative attitude of students who said they did not like to use computers for higher mathematical courses. The main disadvantage in not having mathematical software is the difficulty associated with using generic word processing software such as Microsoft Word for typing higher mathematical work. The only benefit the students derived from using computers was the reading of electronic books and surfing the Internet to get information and not using a computer for mathematical purposes. This justifies why the year of study negatively affects the development of ICT skills.

It appears that on average 38.3% (40.8% males and 35.9% females) of the students admitted to Mukuba University majoring in mathematics had no ICT skills and they acquire their ICT skills while at the Mukuba University. This implies that the environmental factors such as Year of study, Sex of a student, Age of the student, Province where the student stay, Student's confidence, Nature of the BEd programme, and use of ICT by the lecturers help in the improvement of ICT skills.

- (i) The rate of acquisition of ICT skills differs depending on sex of the student and issues of computer student ratio are very crucial in the development of ICT skills.
- (ii) The data showed that female students spend more time on the Internet than male ones and those they prefer to use their own ICT equipment than the male ones. This is shown in Figure 4.3 and Figure 4.4.
- (iii) Many trainee teachers are confident in using a wide range of ICT resources, and limited accessibility affects the way the acquisition of their ICT skills progresses.
- (iv) The pedagogical practices of lecturers using ICT can be enhanced by not forgetting the traditional methods of teaching in order to give detailed explanations to the students.
- (v) Majority of the people in Zambia live in poverty and computers are not even something they dream about. This has always been one of the main challenges of ICT promotion. The home environments do not have ICT equipment where students during the holidays can

practice. Therefore, the government's prime challenge will be combating Zambia's illiteracy rate and creating ICT educated citizens first.

- (vi) Another intervention which directly affects the quality of trainee teachers is the deliberate and aggressive integration of mathematics teaching and learning with technology. This will give students the opportunity to acquire ICT skills in their daily experiences and education system. This would create both men and women who are conversant with using technology and computers from a very early age and could go on to share knowledge and skills with the peers as Vygotsky suggested.

### 10.2 Recommendations

#### 10.2.1 Recommendations for further research

Based on the results of this study, there is now a substantial body of research into the development of ICT Skills among students at Mukuba University, there is much research still to be done to map out the specific relationships between development of ICT skills and various environmental factors. This study concentrated on only seven factors (Province where the student stay, year of study, Sex of a student, Age of the student, lack of practice, Student's confidence, and use of ICT by the lecturers). Therefore many details of these factors might have not been explored; providing areas which need exploiting through further research in order to further explain the precise nature and interplay of the various factors affecting ICT skills development. In view of this, the following recommendations aimed at improving the development of ICT skills among mathematics students could be investigated:

- (i) In order to evaluate the relevance of the importance of the environmental factors to the development of ICT skills, researchers should have relevant subject knowledge.
- (ii) Details of the school where the student did his or her secondary school education rather than the province where the student stay.
- (iii) Further research can be conducted to compare the views of students and the lecturers as this research was restricted to students only. The research findings are based on the student as the subject of study, and therefore lack the input of the lecturers.
- (iv) It is also important that the same focus be replicated in other institutions and also across the institutions. This is to compare and contrast findings and would be critical in determining geographical gaps as well as other factors which were beyond the scope of this study.
- (v) Researchers need extensive knowledge of the ICT skills being investigated and used by trainee teachers in order to develop measures aimed at enhancing the development of relevant skills. The levels of ICT skills (No skill, beginner, intermediate, and advanced) considered in this study may not be the same to another researcher, institution or country. In addition the researcher needs to have extensive knowledge about various software, interpretations, as well as the relevance of the subject matter both qualitatively and

quantitatively. This is in order to narrow the gaps in the meaning, reasoning of the data collected, presented, and the literature review.

## 11. Other Recommendations

For more effective acquisition of ICT skills the following recommendations are proposed:

- (i) Introduction of an orientation programme in ICTs to all new students to be done in the first few weeks of their being at the university, or to actively integrate such a programme in other courses.
- (ii) The Ministry of Education, Science, Vocational, Training and Early Childhood Education in collaboration with ZICTA to develop a scale to determine the level of skills in ICTs students should have acquired at a particular educational level in order to make it easier for researchers to carry out studies employing on a standard scale and making comparisons with other researchers valid.
- (iii) It is a universally accepted fact that, we now live in a technology and media-driven environment, marked by access to an abundance of information, rapid changes in technology tools and the ability to collaborate and make individual contributions on an unprecedented scale. Effective citizens and workers must be able to exhibit a range of functional and critical thinking skills, such as: Information Literacy, Media Literacy, and ICT Literacy.
- (iv) Deliberately integrating specialized schools (Secondary schools with enhanced coverage of certain subjects that constitute the specialization of the school) in science and technology into the mainstream educational system starting from grade 8. This would create both men and women who know what technology and computers are from a fairly early age and could go on to study and excel in the fields of Computer Science and other technology-dependent fields. Individuals with this advanced knowledge are lacking in Zambia because they usually leave the country looking for better opportunities elsewhere.
- (v) Mathematical software should be bought for trainee teachers of mathematics to use for mathematical work. These Conclusions and recommendations of this study may not be the same for the future as responses can change over time as participants can change, as does the ICT landscape.

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